

i3A4W008A033V-001-R

EVALUATION DATA

型式データ

INDEX

	PAGE
1. 測定方法 Evaluation Method	
1-1. 測定回路 Measurement circuits	3
(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) 出力リップル、ノイズ波形 Output ripple and noise waveform	
1-2. 使用測定機器 List of equipment used	4
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	5
(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	6
(3) 入力電流・効率 対 出力電流 Input current and Efficiency vs. Output current	8
(4) 効率 対 入力電圧 Efficiency vs. Input voltage	10
(5) 効率 対 温度 Efficiency vs. Temperature	12
(6) 起動・遮断電圧特性 Start up and Drop out voltage characteristics	14
2-2. 待機電力特性 Standby power characteristics	16
2-3. 過電流保護特性 Over current protection (OCP) characteristics	17
2-4. 出力立ち上がり・立ち下がり特性 Output rise and fall characteristics	19
2-5. 過渡応答(負荷急変)特性 Dynamic load response characteristics	27
2-6. 出力リップル、ノイズ波形 Output ripple and noise waveform	28

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

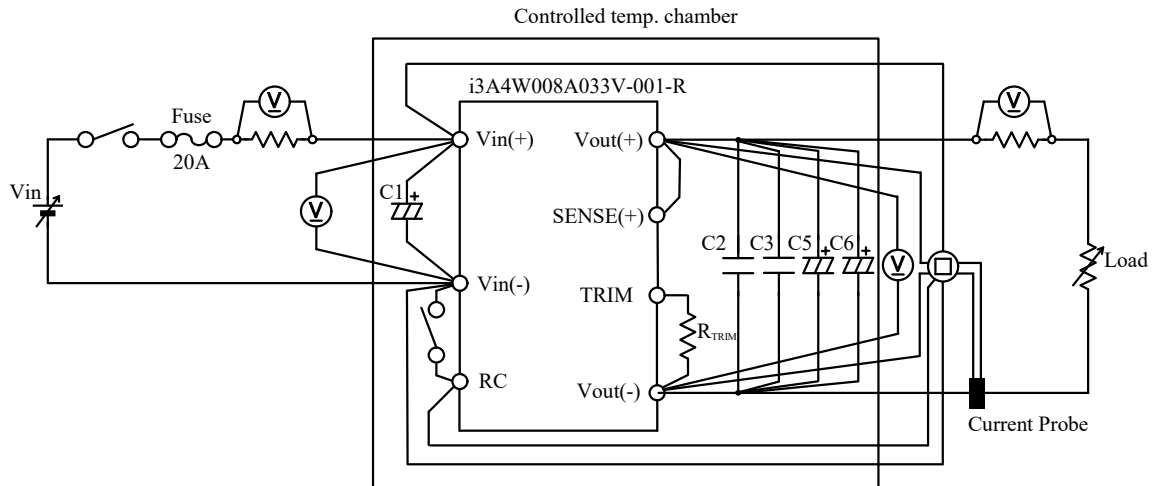
※ 当社測定条件における結果であり、参考値としてお考え願います。
Test results are reference data based on our measurement condition.

1. 測定方法 Evaluation Method

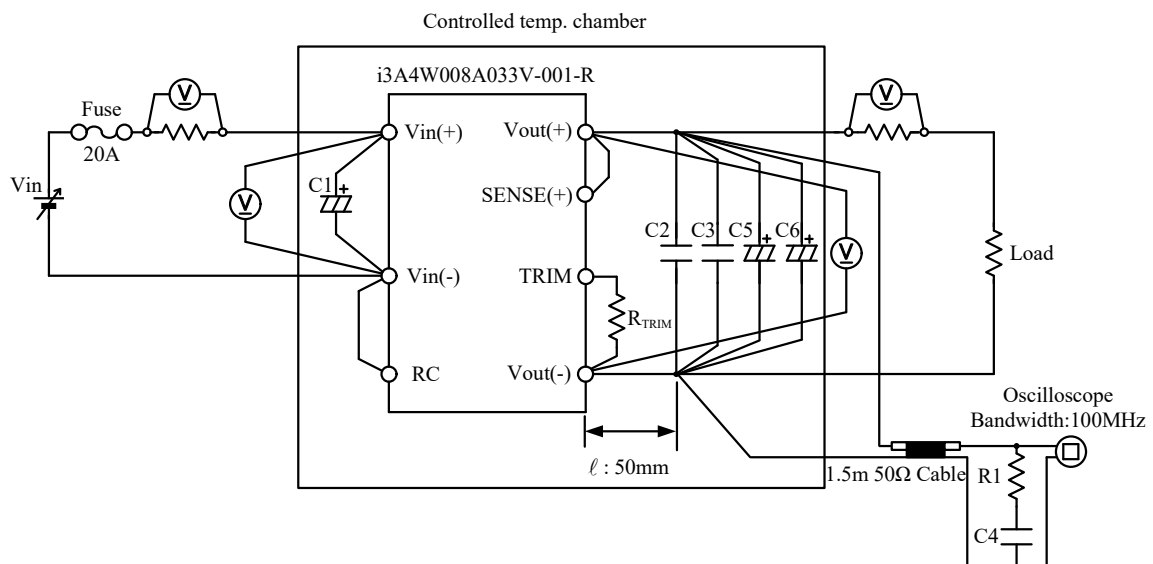
1-1. 測定回路 Measurement Circuits

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



- | | |
|------------------|------------------------|
| C1 : 120 μ F | Electrolytic Capacitor |
| C2 : 22 μ F | Ceramic Capacitor |
| C3 : 1000pF | Ceramic Capacitor |
| C4 : 4700pF | Ceramic Capacitor |
| R1 : 50 Ω | |
| C5 : 100 μ F | Electrolytic Capacitor |
| C6 : 100 μ F | Electrolytic Capacitor |

1-2. 使用測定機器 List of equipment used

	EQUIPMENT USED	MANUFACTURER	MODEL NO.
1	DIGITAL STORAGE OSCILLOSCOPE	YOKOGAWA ELECT.	DL1740EL
2	DIGITAL MULTIMETER	AGILENT	34970A
3	CURRENT PROBE	YOKOGAWA ELECT.	700937
4	SHUNT RESISTER	YOKOGAWA ELECT.	2215
5	DYNAMIC DUMMY LOAD	TAKASAGO	FK-400L
6	DC POWER SUPPLY	TAKASAGO	EX-375L2
7	CONTROLLED TEMP. CHAMBER	ESPEC	SU-641

2. 特性データ Characteristics

2-1 静特性 Steady state data

(1) 入力変動、負荷変動、温度変動 Regulation - line and load, Temperature drift

Vo=3.3V

1. Regulation - line and load

Condition Ta : 25 °C

Io \ Vin	9VDC	12VDC	24VDC	48VDC	Line regulation	
0%	3.304V	3.304V	3.305V	3.307V	3mV	0.091%
50%	3.298V	3.299V	3.300V	3.301V	3mV	0.091%
100%	3.295V	3.295V	3.295V	3.295V	0mV	0.000%
Load regulation	9mV	9mV	10mV	12mV		
	0.273%	0.273%	0.303%	0.364%		

2. Temperature drift

Conditions Vin : 24 VDC

Io : 100 %

Ta	-40°C	25°C	85°C	Temperature stability	
Vo	3.277V	3.295V	3.299V	22mV	0.667%

Vo=5V

1. Regulation - line and load

Condition Ta : 25 °C

Io \ Vin	9VDC	12VDC	24VDC	48VDC	Line regulation	
0%	5.011V	5.012V	5.013V	5.015V	4mV	0.080%
50%	5.001V	5.002V	5.003V	5.005V	4mV	0.080%
100%	4.995V	4.995V	4.995V	4.996V	1mV	0.020%
Load regulation	16mV	17mV	18mV	19mV		
	0.320%	0.340%	0.360%	0.380%		

2. Temperature drift

Conditions Vin : 24 VDC

Io : 100 %

Ta	-40°C	25°C	85°C	Temperature stability	
Vo	4.970V	4.995V	5.004V	34mV	0.680%

Vo=12V

1. Regulation - line and load

Condition Ta : 25 °C

Io \ Vin	16VDC	24VDC	48VDC	Line regulation	
0%	11.992V	11.997V	12.001V	12mV	0.100%
50%	11.967V	11.965V	11.975V	12mV	0.100%
100%	11.949V	11.943V	11.938V	12mV	0.100%
Load regulation	43mV	54mV	63mV		
	0.358%	0.450%	0.525%		

2. Temperature drift

Conditions Vin : 24 VDC

Io : 100 %

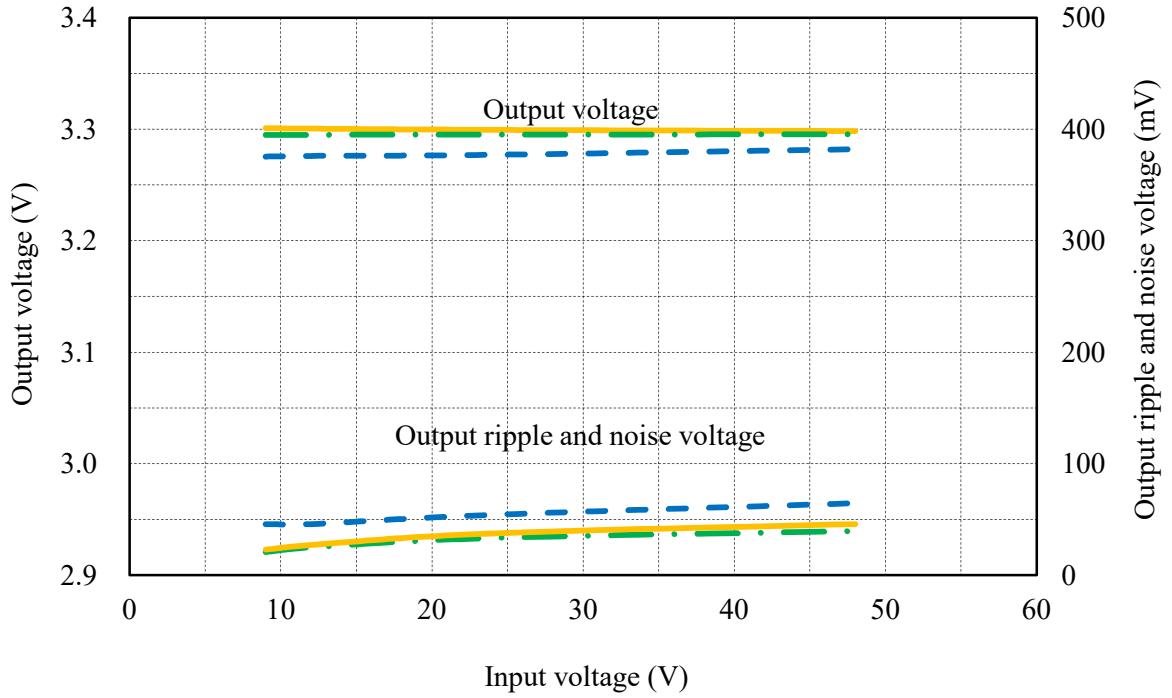
Ta	-40°C	25°C	85°C	Temperature stability	
Vo	11.888V	11.938V	11.961V	73mV	0.608%

(2) 出力電圧・出力リップルノイズ電圧 対 入力電圧

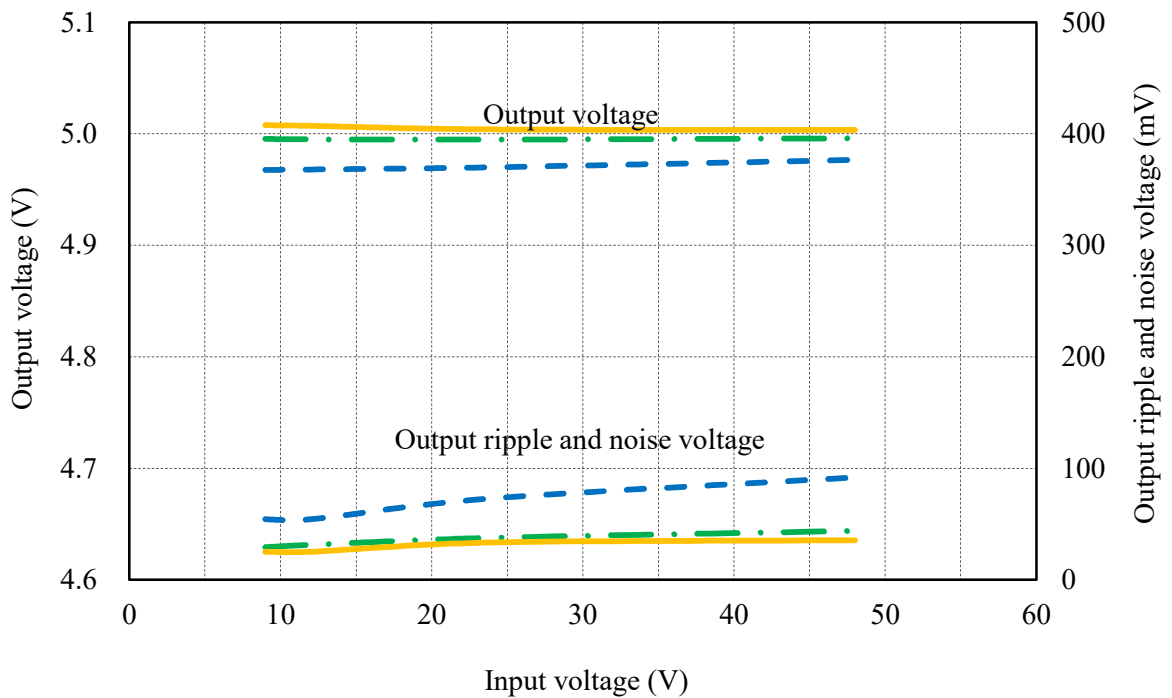
Output voltage and Output ripple and noise voltage vs. Input voltage

Conditions I_o : 100 %
 T_a : -40 °C ---
 : 25 °C -.-
 : 85 °C —

$V_o=3.3V$



$V_o=5V$

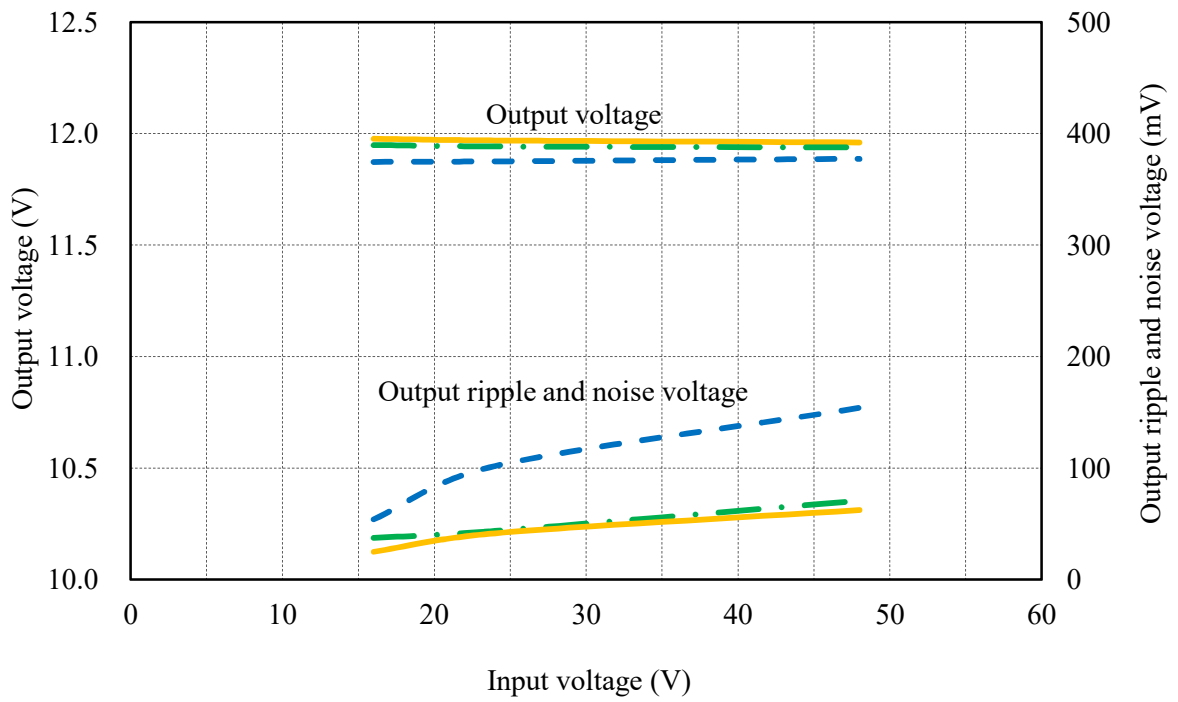


(2) 出力電圧・出力リップルノイズ電圧 対 入力電圧

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

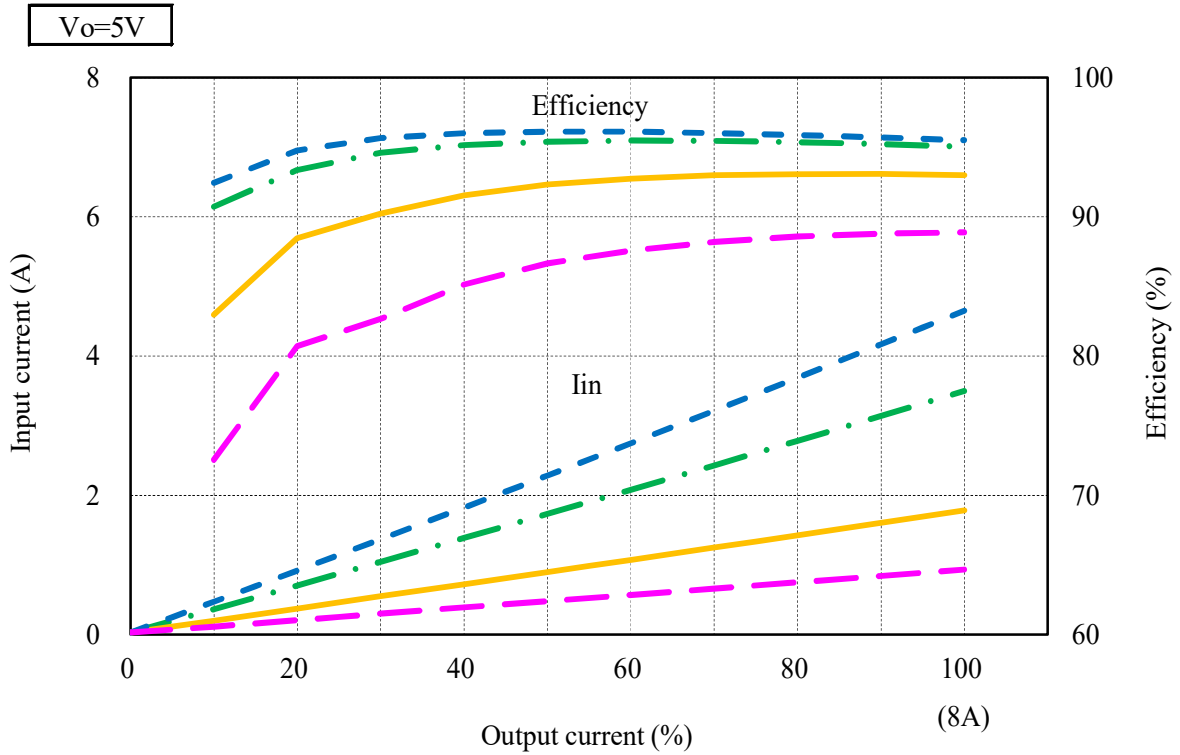
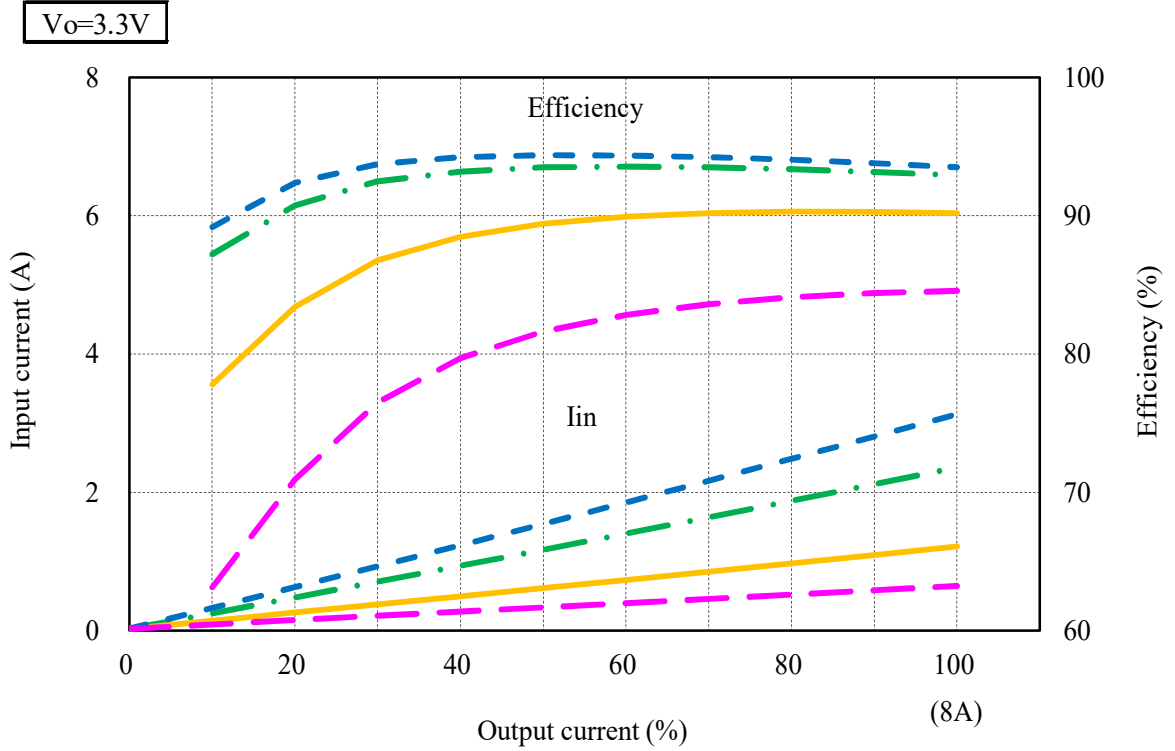
Conditions Io : 100 %
Ta : -40 °C ---
: 25 °C -.-
: 85 °C —

Vo=12V

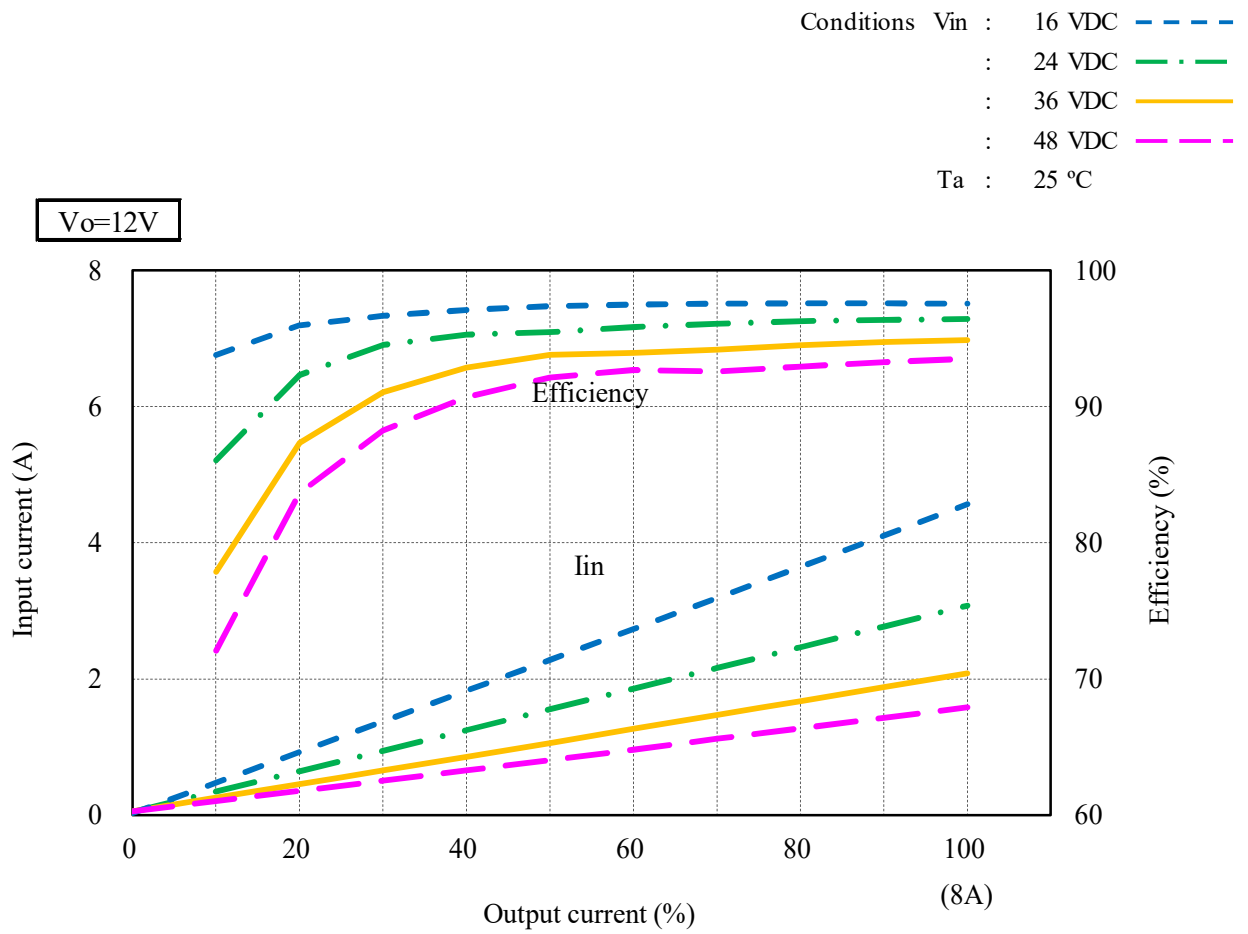


(3) 入力電流・効率 対 出力電流 Input current and Efficiency vs. Output current

Conditions Vin : 9 VDC ---
 : 12 VDC -.-
 : 24 VDC —
 : 48 VDC - - -
 Ta : 25 °C



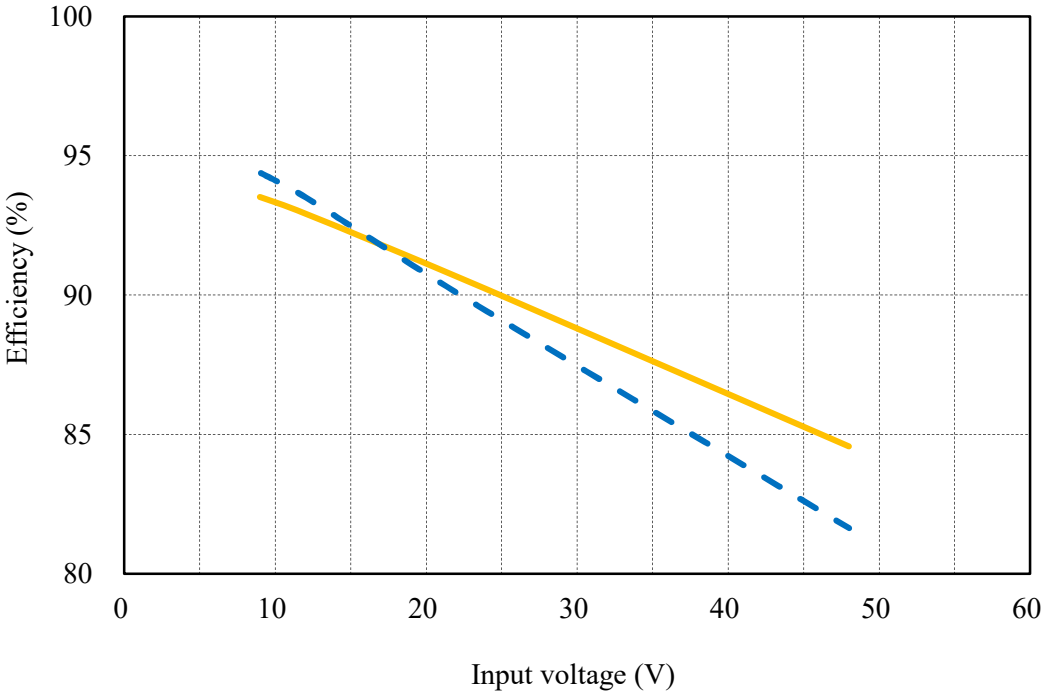
(3) 入力電流・効率 対 出力電流 Input current and Efficiency vs. Output current



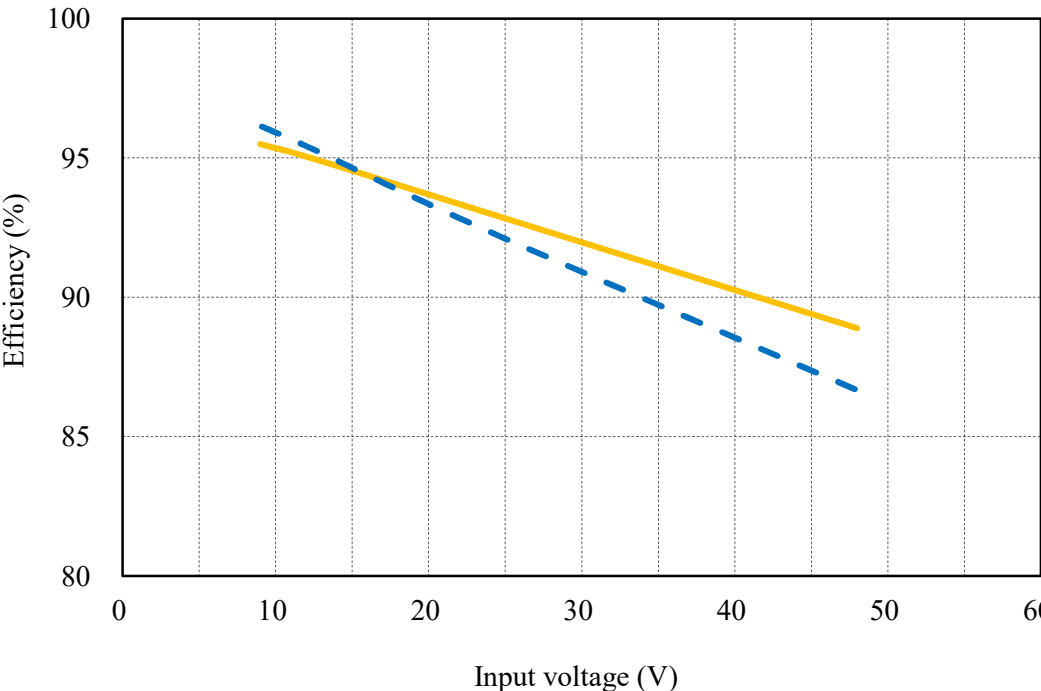
(4) 効率 対 入力電圧 Efficiency vs. Input voltage

Conditions I_o : 50 % - - - -
 : 100 % ————
 T_a : 25 °C

V_o=3.3V

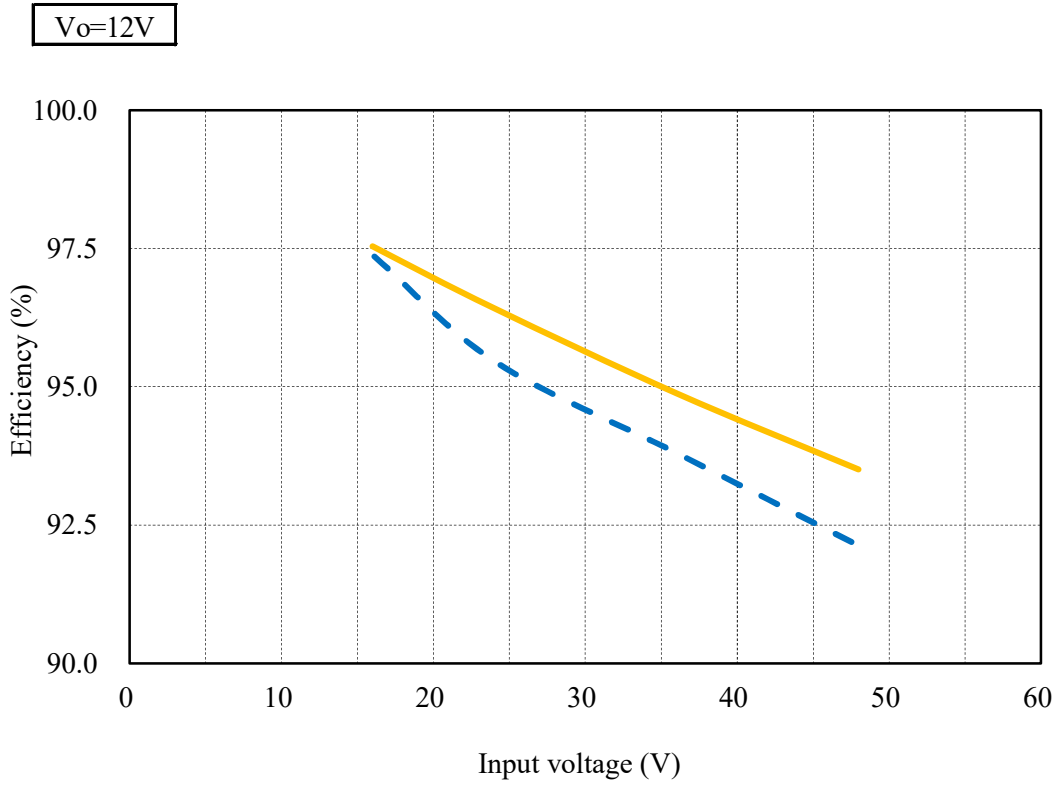


V_o=5V



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

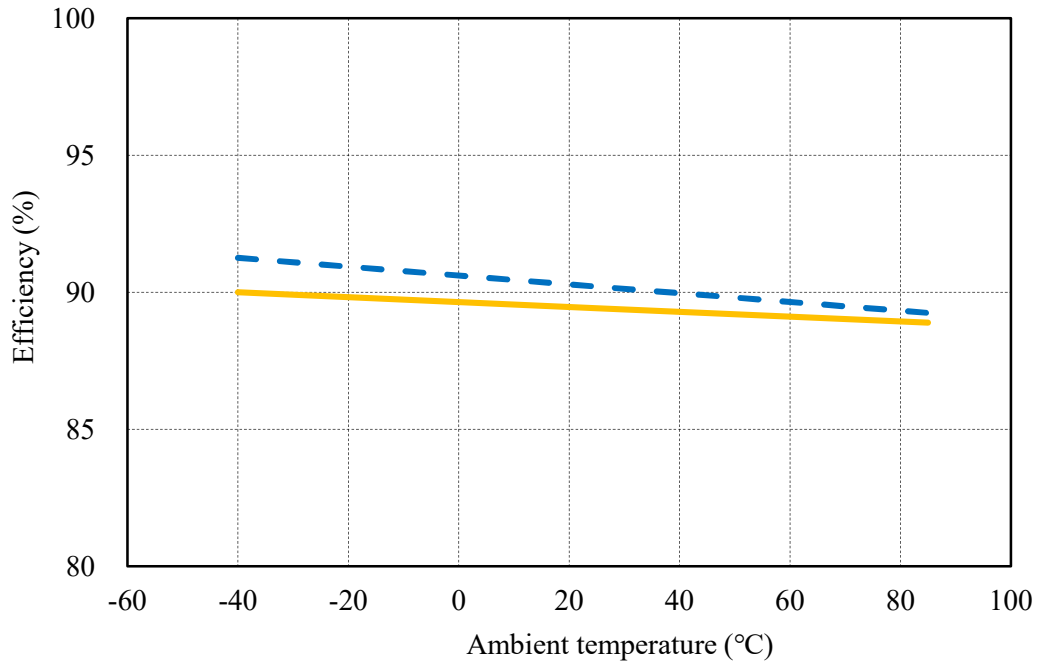
Conditions Io : 50 % ---
 : 100 % ———
 Ta : 25 °C



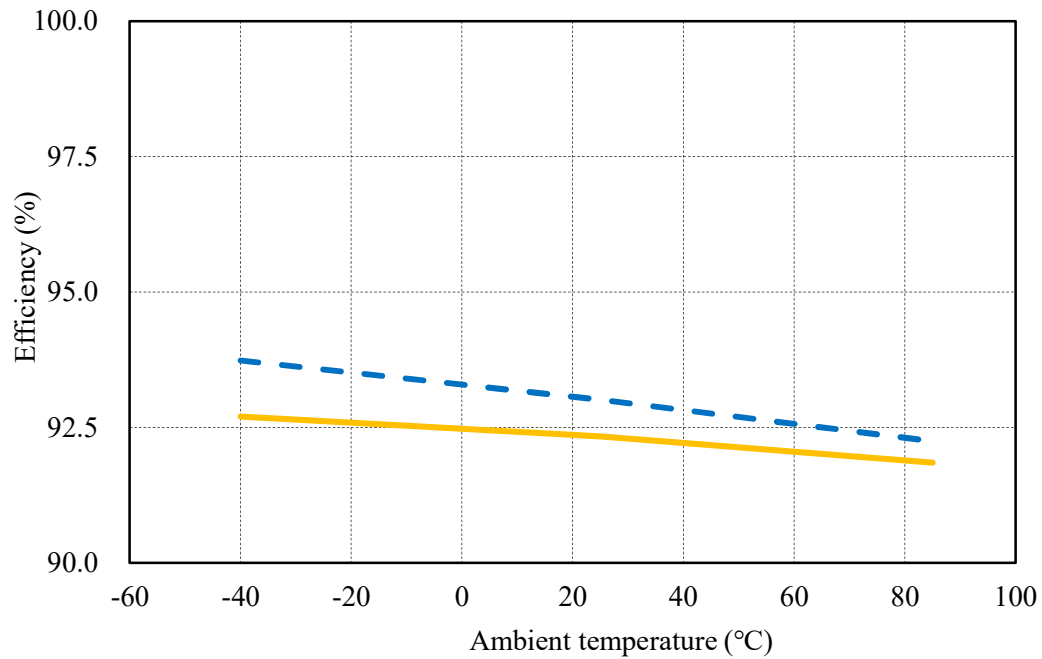
(5) 效率 对 温度 Efficiency vs. Temperature

Conditions V_{in} : 24 V
 I_o : 50 % - - - -
 : 100 % —————

$V_o=3.3V$



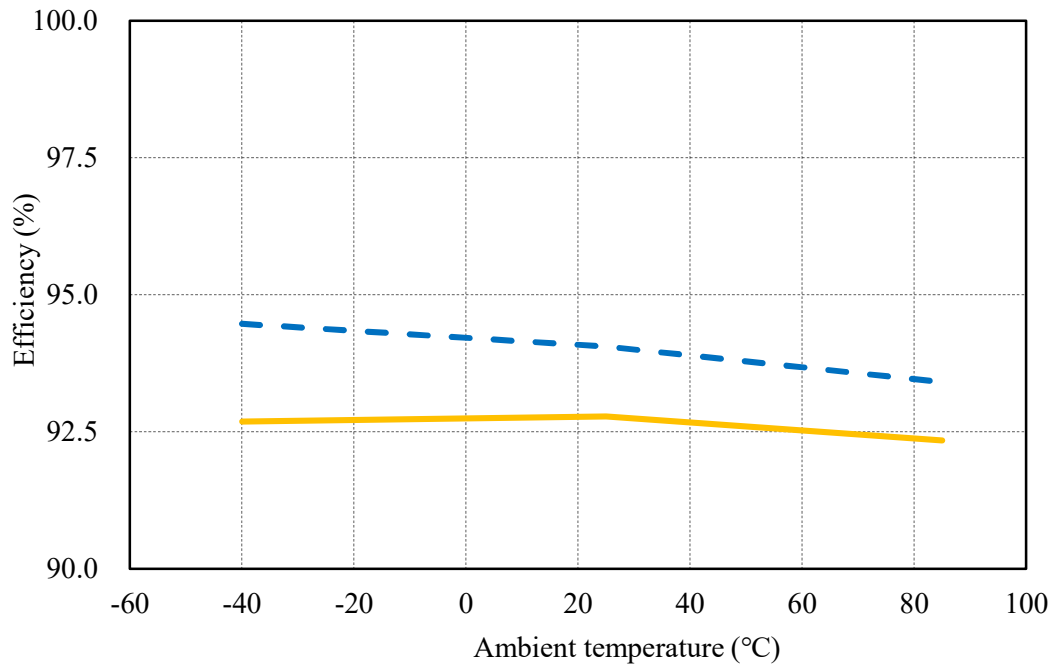
$V_o=5V$



(5) 效率 对 温度 Efficiency vs. Temperature

Conditions V_{in} : 24 V
 I_o : 50 % - - - -
 : 100 % —————

$V_o=12V$



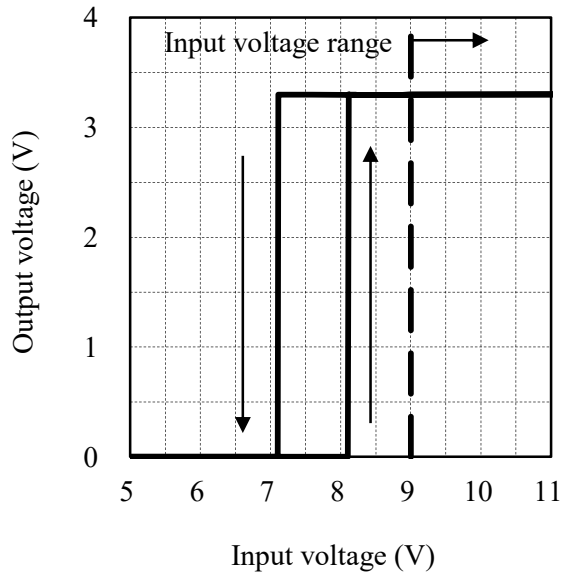
(6) 起動・遮断電圧特性 Start up and Drop out voltage characteristics

出力電圧 対 入力電圧

Output voltage vs. Input voltage

Conditions I_o : 100 %
 T_a : 25 °C

$V_o=3.3V$

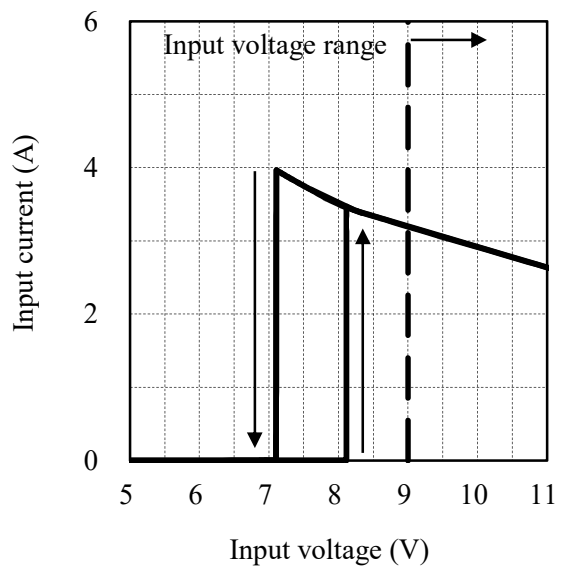


入力電流 対 入力電圧

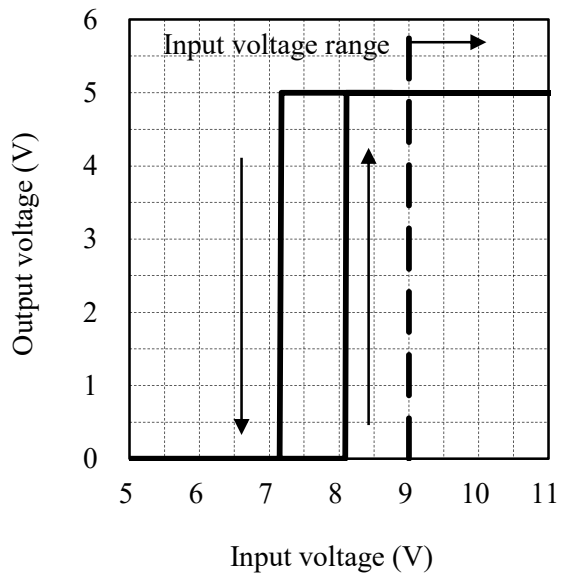
Input current vs. Input voltage

Conditions I_o : 100 %
 T_a : 25 °C

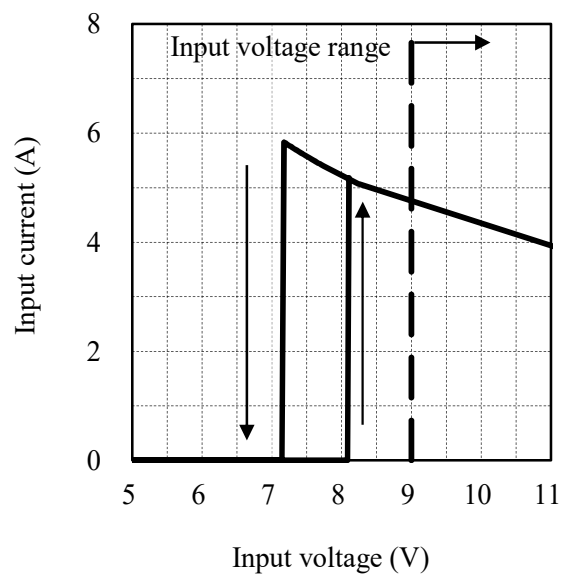
$V_o=3.3V$



$V_o=5V$



$V_o=5V$

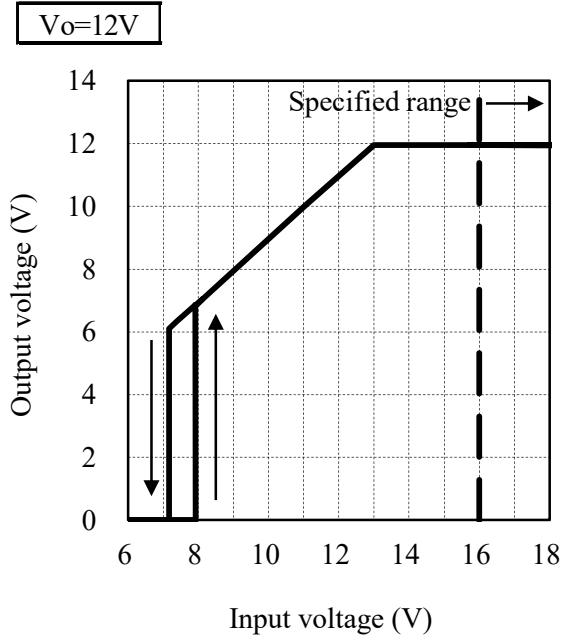


(6) 起動・遮断電圧特性 Start up and Drop out voltage characteristics

出力電圧 対 入力電圧

Output voltage vs. Input voltage

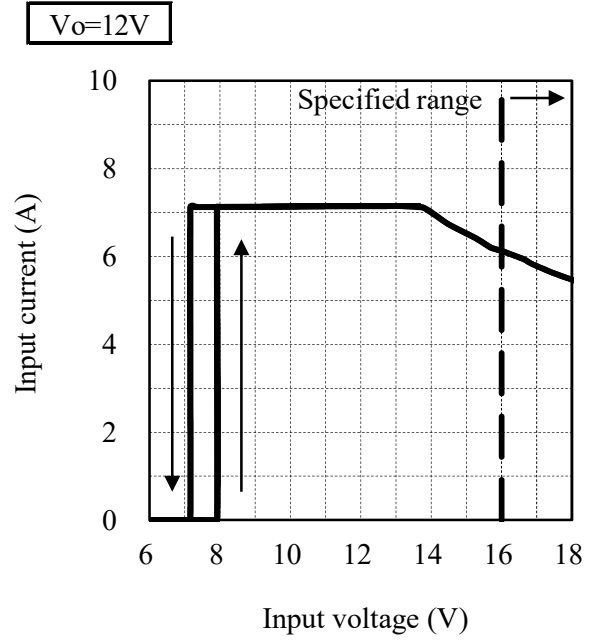
Conditions I_o : 100 %
 T_a : 25 °C



入力電流 対 入力電圧

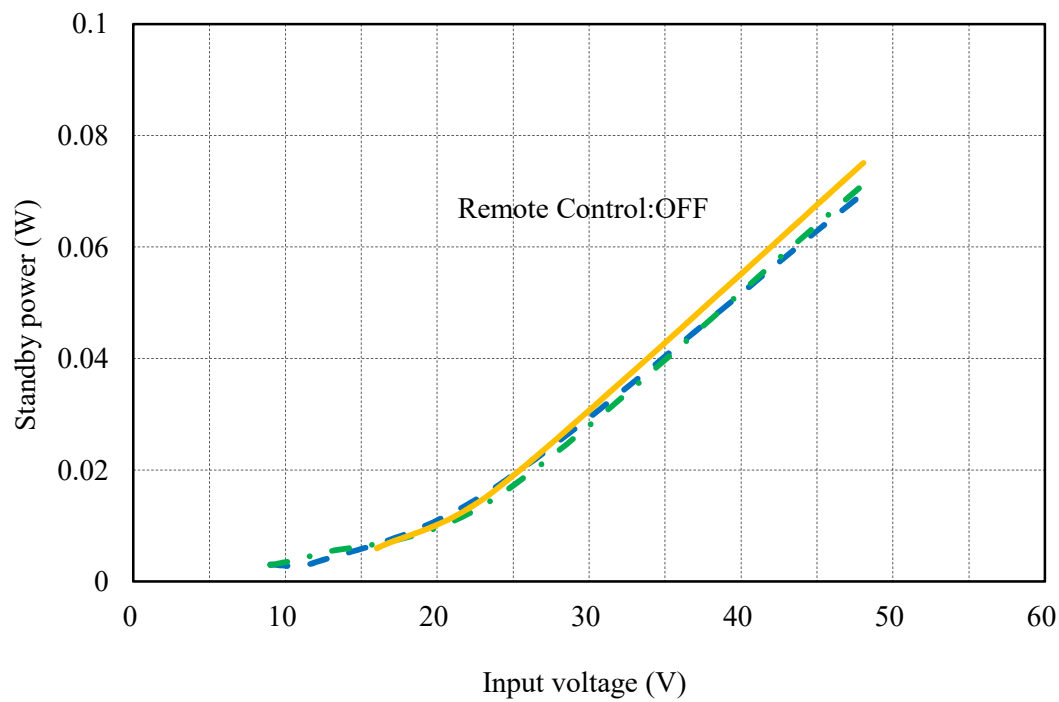
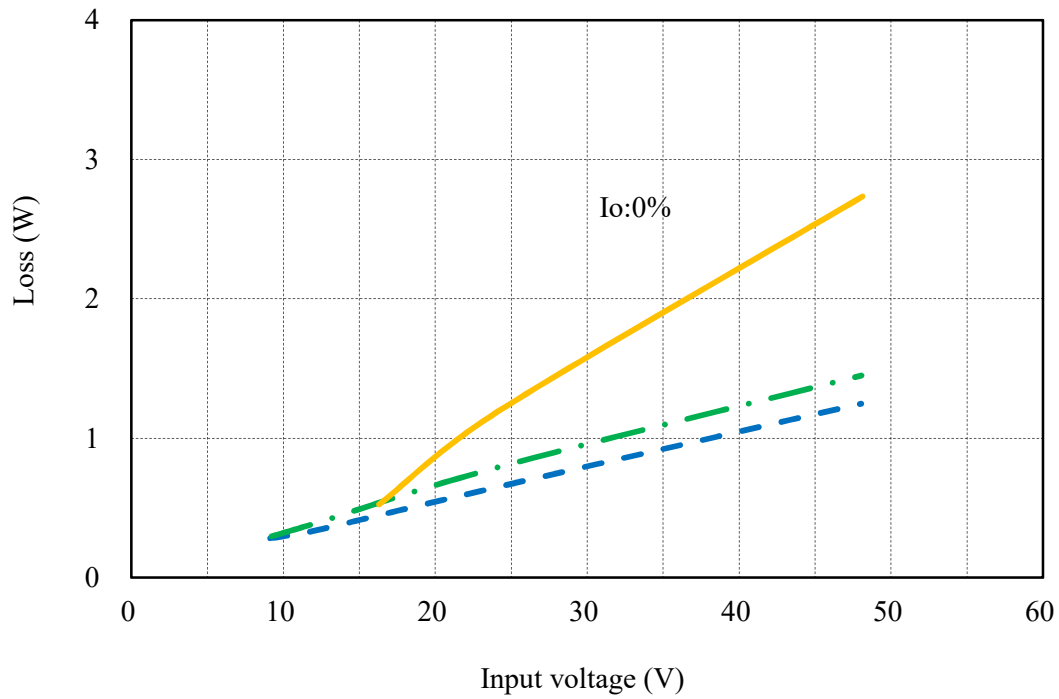
Input current vs. Input voltage

Conditions I_o : 100 %
 T_a : 25 °C



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

Conditions Vo : 3.3 VDC - - - - -
 : 5 VDC - . - - -
 : 12 VDC - - - - -
 Ta : 25 °C



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

入力電圧依存性

Input voltage dependence

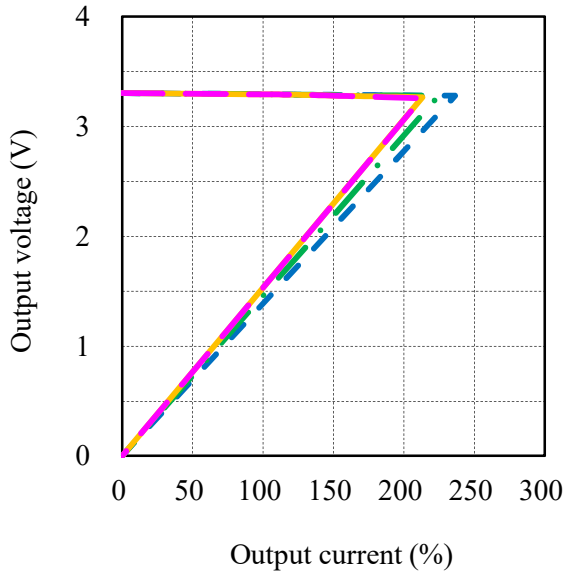
Conditions Vin : 9 VDC — — — —
 : 12 VDC - · - · - ·
 : 24 VDC —————
 : 48 VDC —————
 Ta : 25 °C

周囲温度依存性

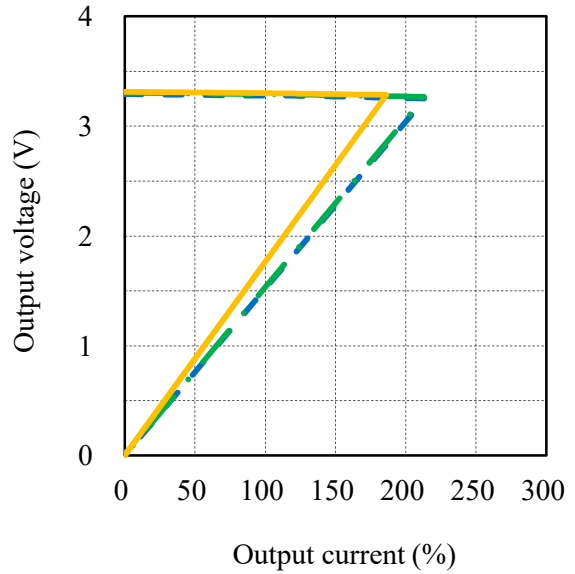
Ambient temperature dependence

Conditions Vin : 24 VDC
 Ta : -40 °C — — — —
 : 25 °C - · - · - ·
 : 85 °C —————

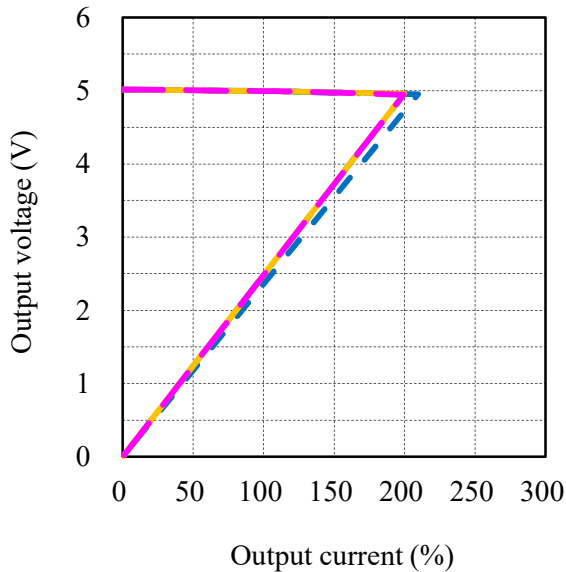
Vo=3.3V



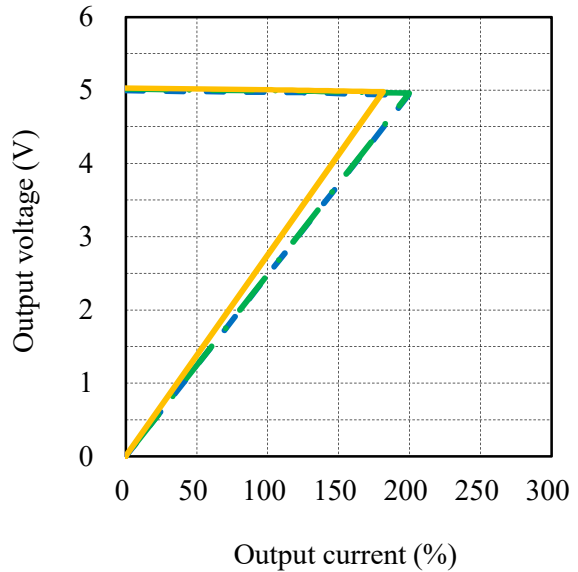
Vo=3.3V



Vo=5V



Vo=5V



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

入力電圧依存性

Input voltage dependence

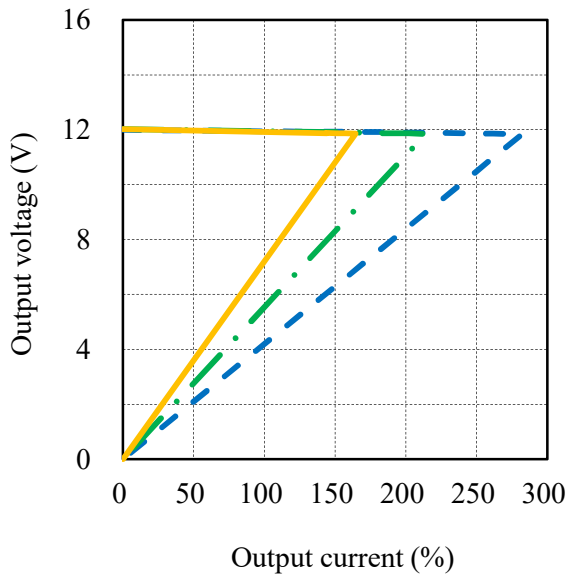
Conditions Vin : 16 VDC — — — —
 : 24 VDC — · — · —
 : 48 VDC — — — —
 Ta : 25 °C

周囲温度依存性

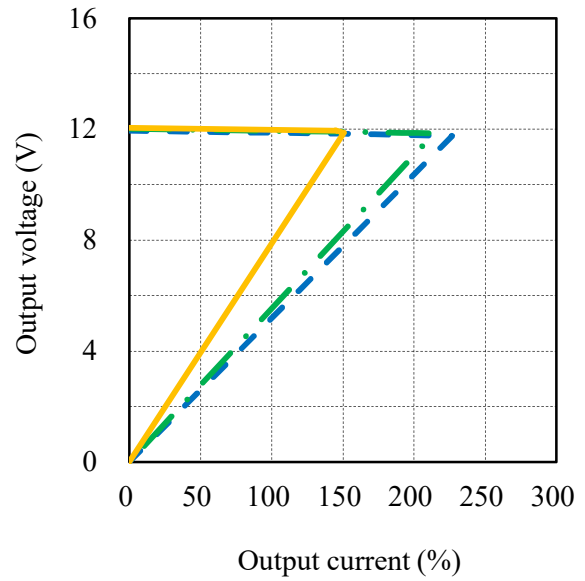
Ambient temperature dependence

Conditions Vin : 24 VDC
 Ta : -40 °C — — — —
 : 25 °C — · — · —
 : 85 °C — — — —

Vo=12V



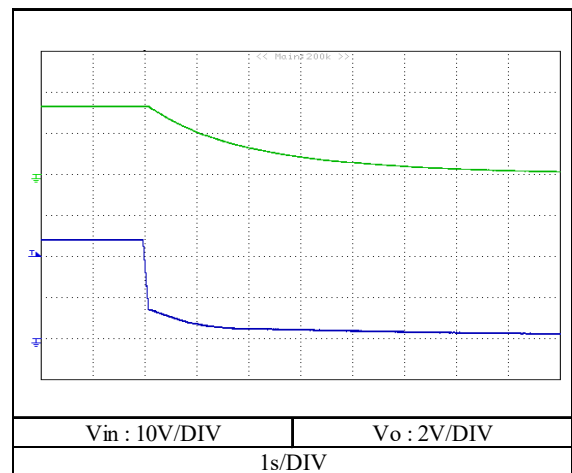
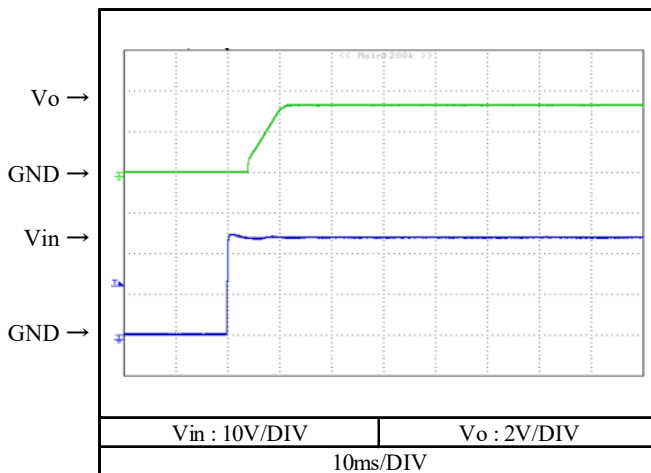
Vo=12V



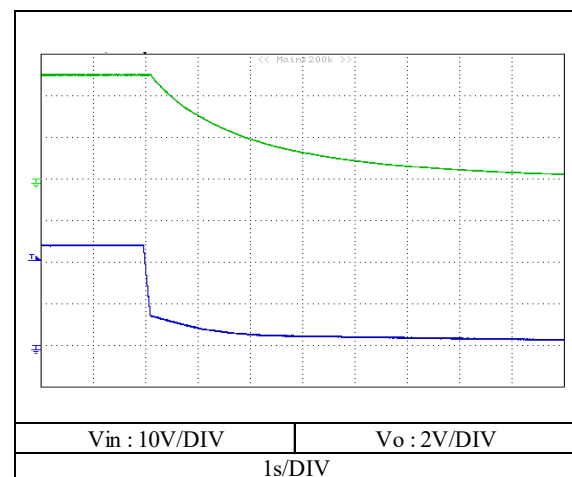
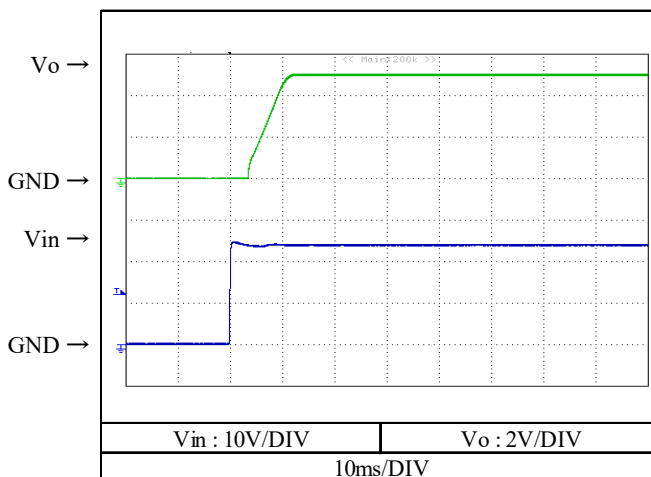
2-4. 出力立ち上がり・立ち下がり特性 Output rise and fall characteristics

Conditions V_{in} : 24 VDC
 I_o : 0 %
 T_a : 25 °C

$V_o=3.3V$



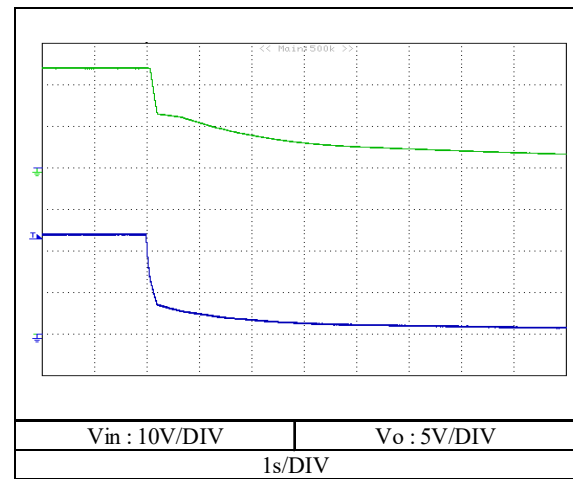
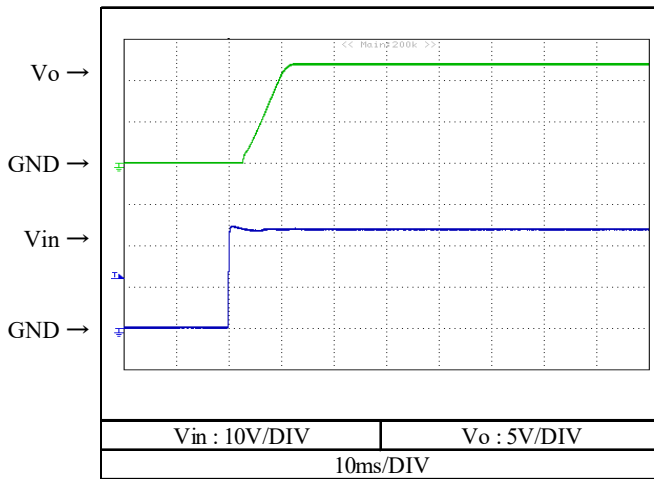
$V_o=5V$



2-4. 出力立ち上がり・立ち下がり特性 Output rise and fall characteristics

Conditions V_{in} : 24 VDC
 I_o : 0 %
 T_a : 25 °C

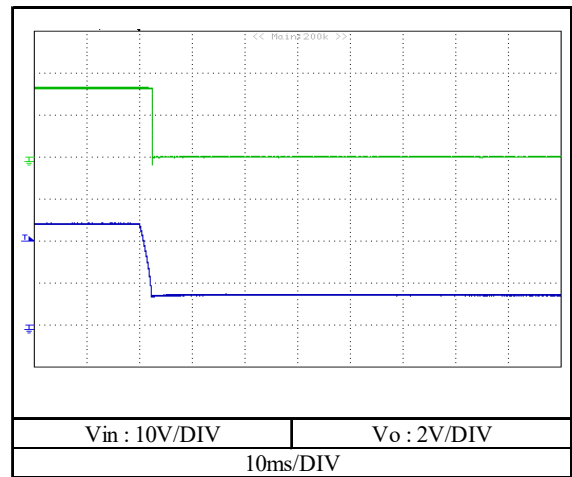
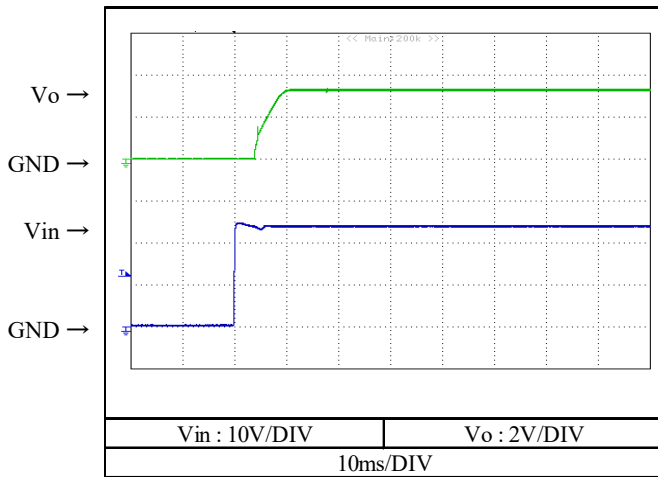
$V_o=12V$



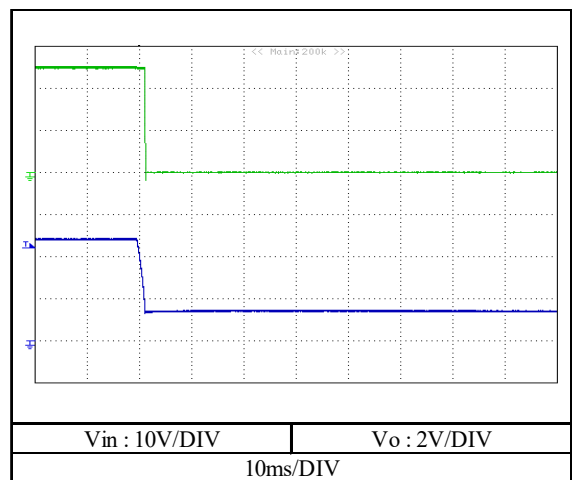
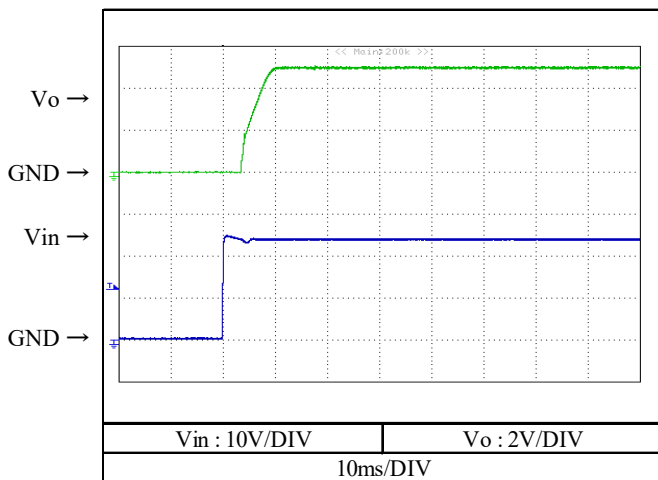
2-4. 出力立ち上がり・立ち下がり特性 Output rise and fall characteristics

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

$V_o=3.3V$



$V_o=5V$



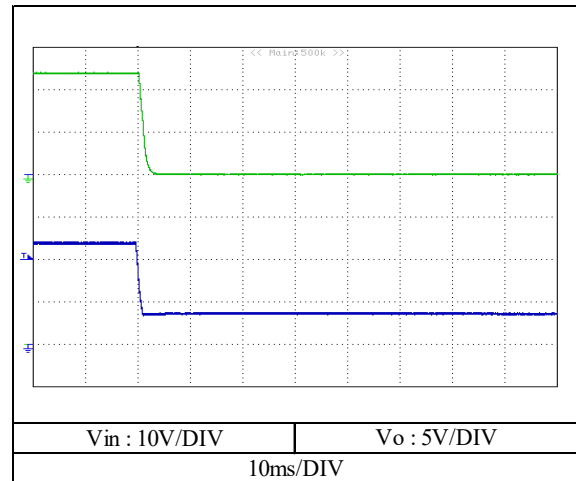
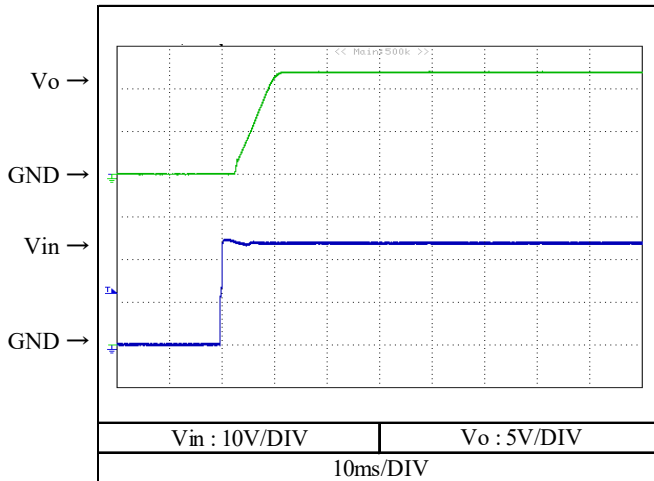
2-4. 出力立ち上がり・立ち下がり特性 Output rise and fall characteristics

Conditions V_{in} : 24 VDC

I_o : 100 %

T_a : 25 °C

$V_o=12V$



2-4. 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)

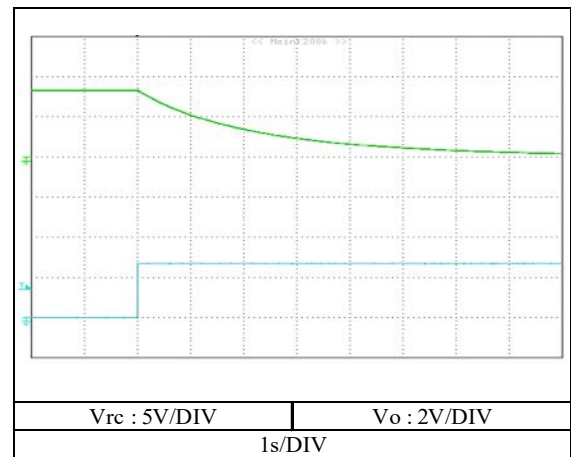
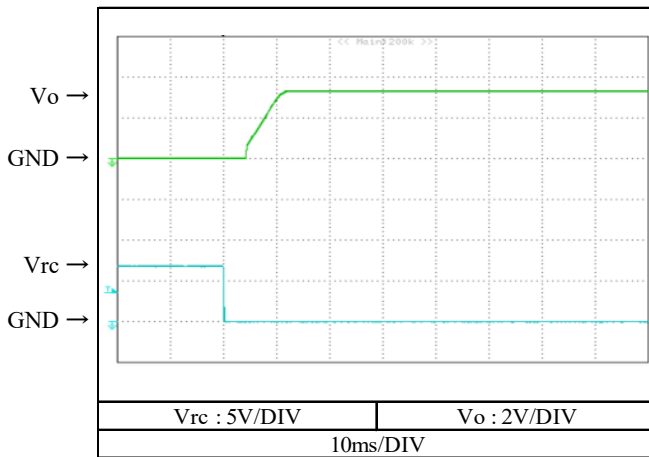
Output rise and fall characteristics with REMOTE ON/OFF CONTROL

Conditions V_{in} : 24 VDC

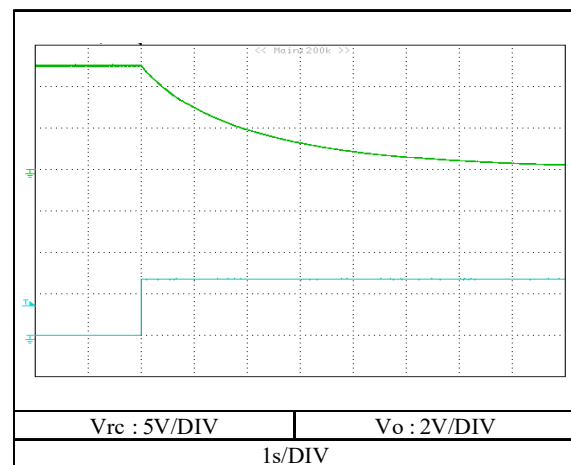
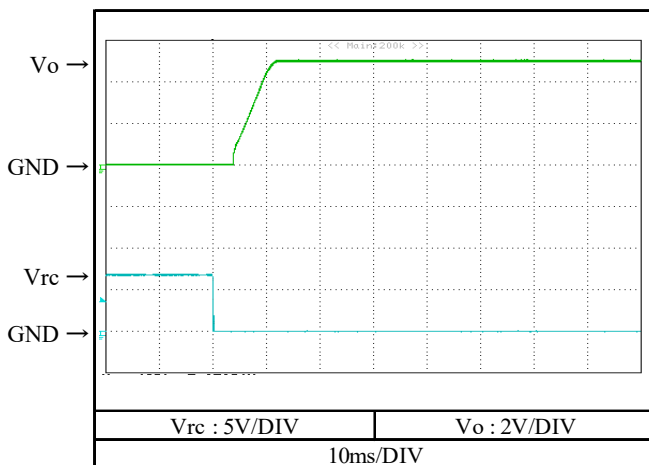
I_o : 0 %

T_a : 25 °C

$V_o=3.3V$



$V_o=5V$



2-4. 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)

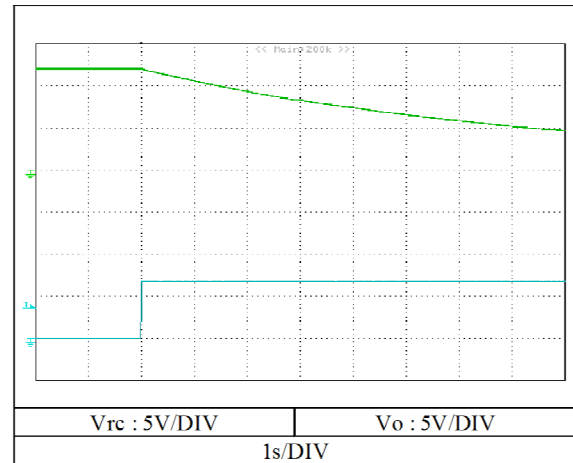
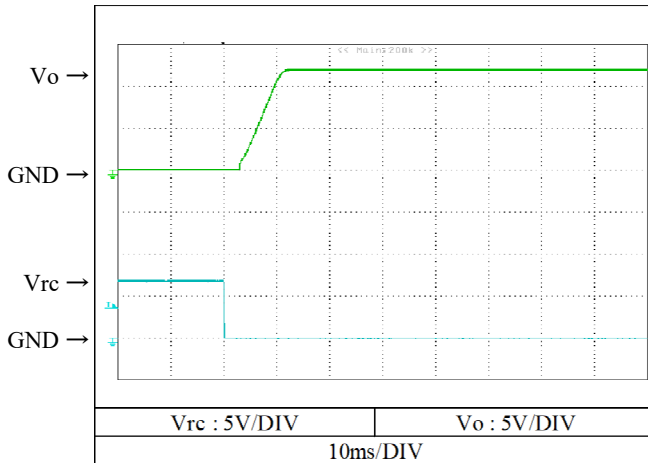
Output rise and fall characteristics with REMOTE ON/OFF CONTROL

Conditions V_{in} : 24 VDC

I_o : 0 %

T_a : 25 °C

$V_o=12V$



2-4. 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)

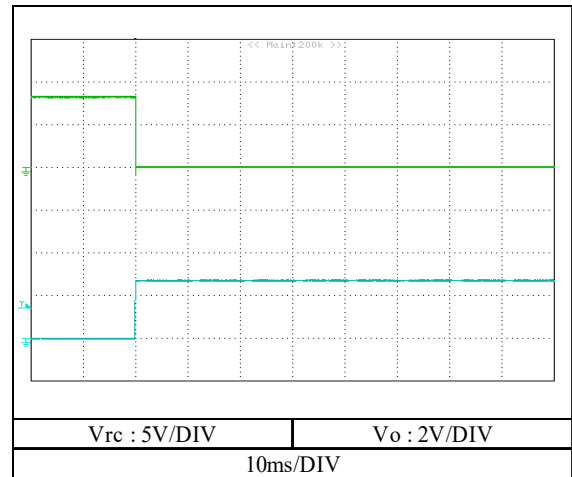
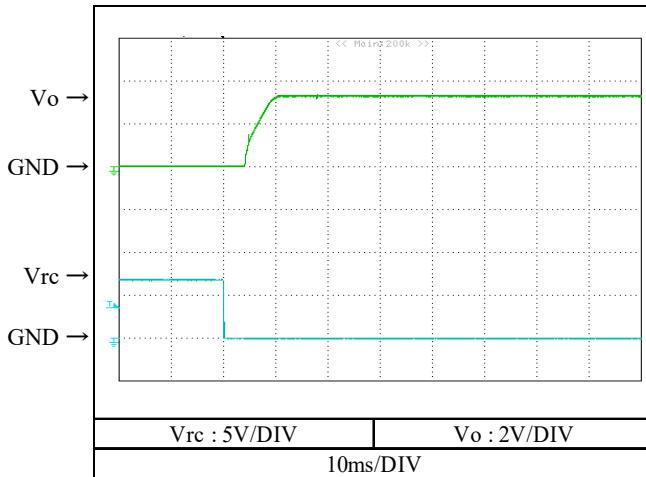
Output rise and fall characteristics with REMOTE ON/OFF CONTROL

Conditions V_{in} : 24 VDC

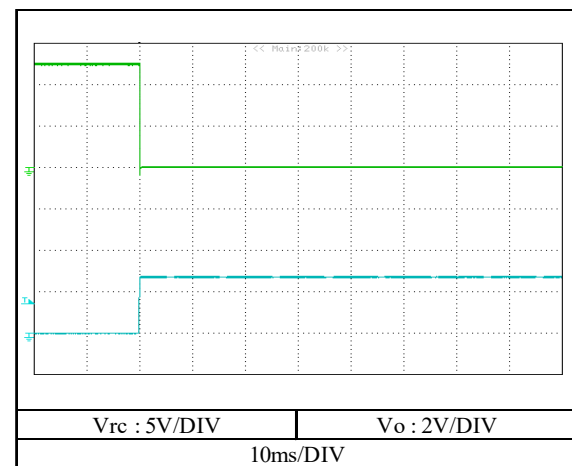
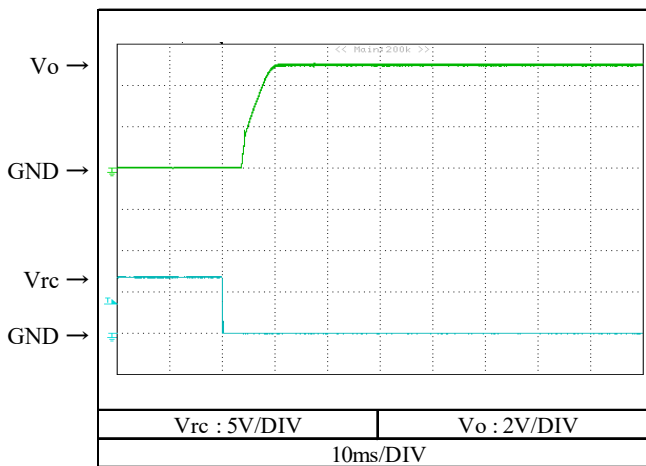
I_o : 100 %

T_a : 25 °C

$V_o=3.3V$



$V_o=5V$



2-4. 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)

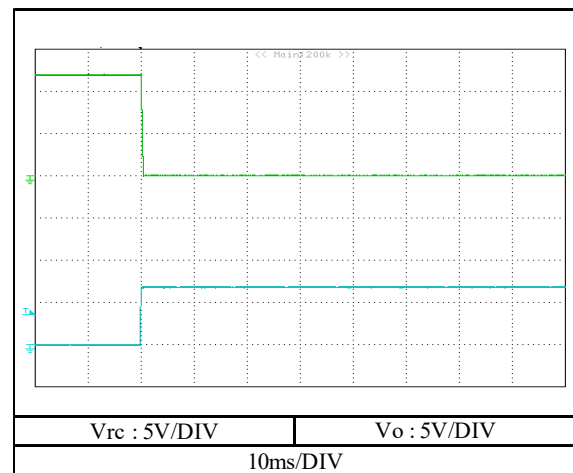
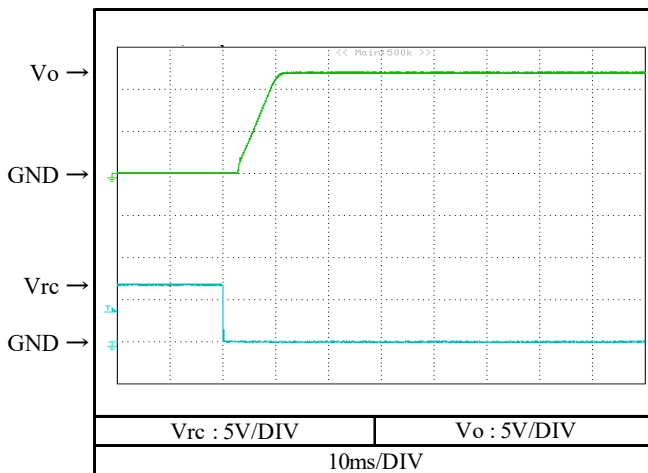
Output rise and fall characteristics with REMOTE ON/OFF CONTROL

Conditions V_{in} : 24 VDC

I_o : 100 %

T_a : 25 °C

$V_o=12V$

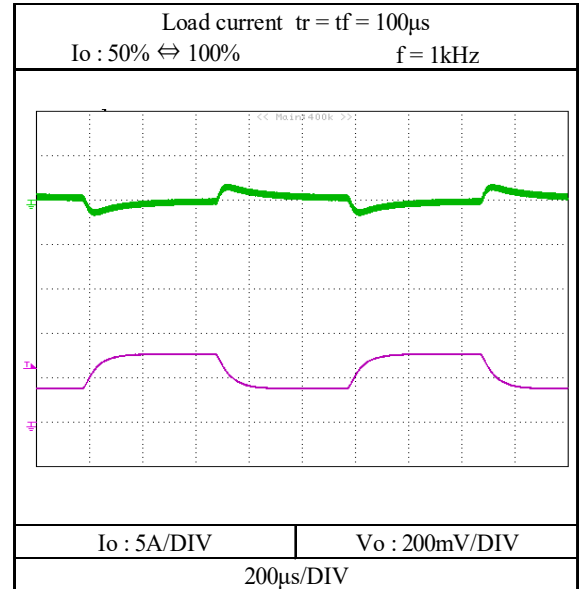
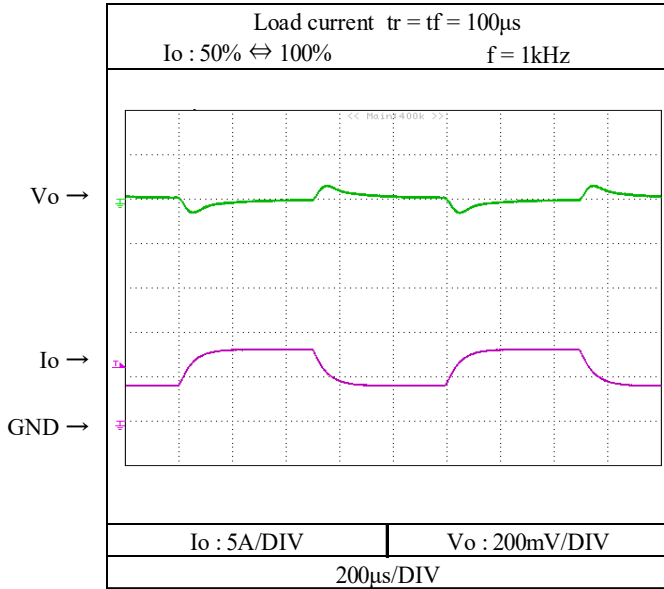


2-5. 過渡応答(負荷急変)特性 Dynamic load response characteristics

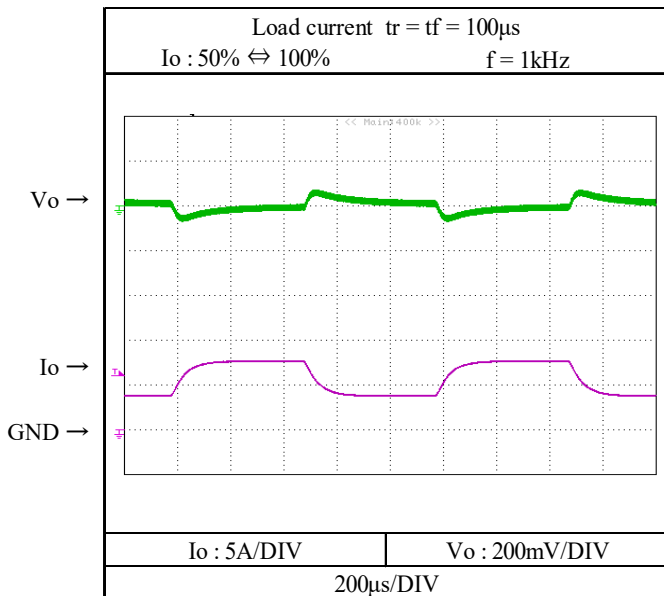
Conditions V_{in} : 24 VDC
 T_a : 25 °C

$V_o=3.3V$

$V_o=5V$



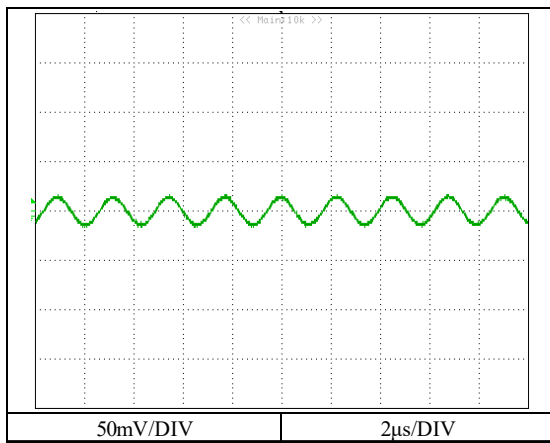
$V_o=12V$



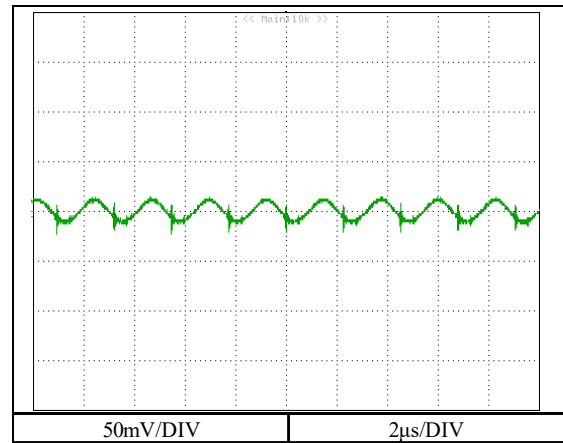
2-6. 出力リップル、ノイズ波形 Output ripple and noise waveform

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

$V_o=3.3V$



$V_o=5V$



$V_o=12V$

