i6A4W020A033V-001-R

EVALUATION DATA

型式データ

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1. 測定方法 Evaluation Method

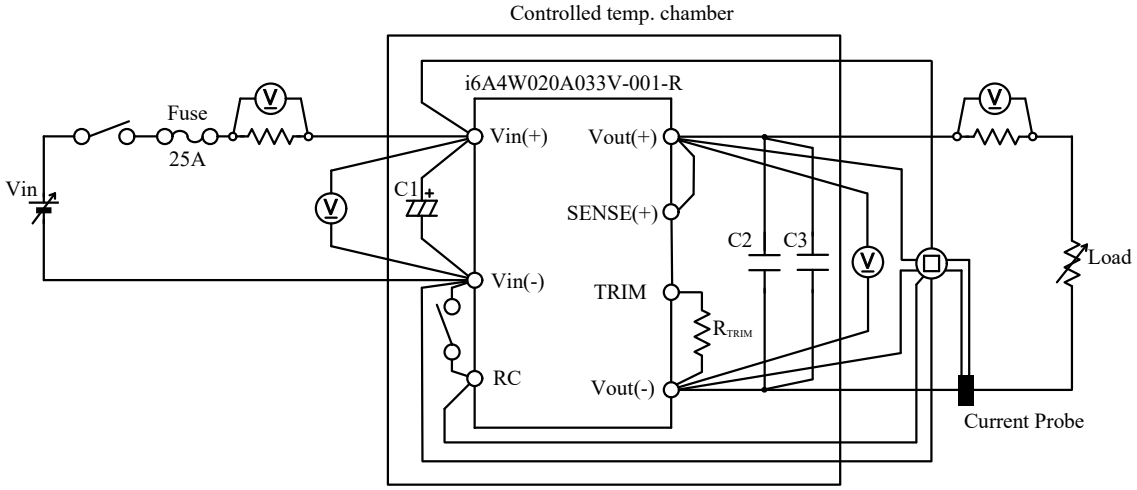
1-1. 測定回路 Measurement circuits ・・・

1. 測定方法 Evaluation Method

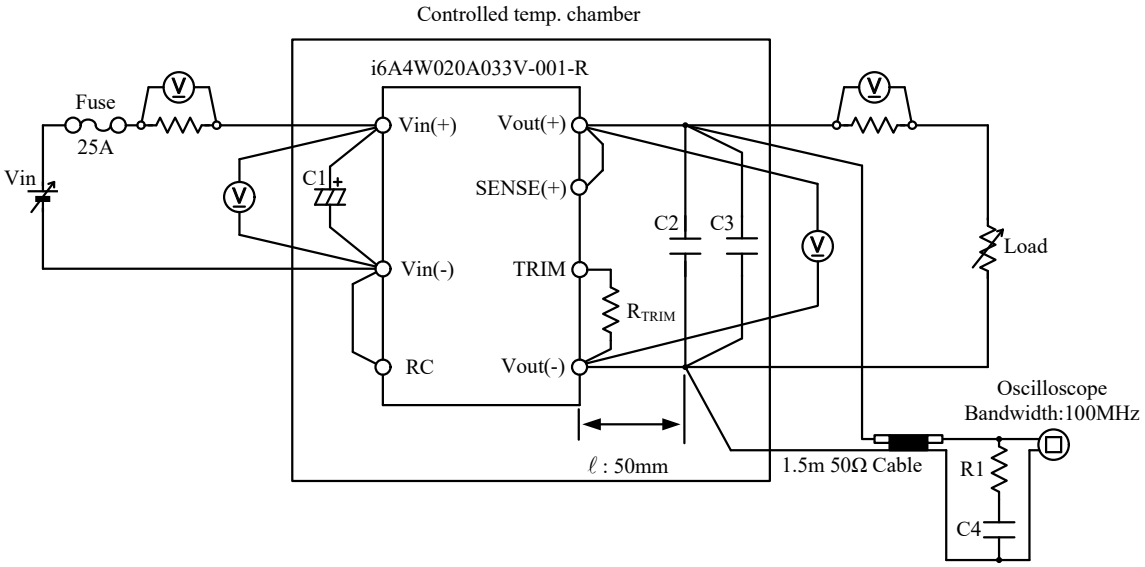
1-1. 測定回路 Measurement Circuits

(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	: 120μF	Electrolytic Capacitor
C2	: 22μF	Ceramic Capacitor
C3	: 1000pF	Ceramic Capacitor
C4	: 4700pF	Ceramic Capacitor
R1	: 50Ω	

1-2. 使用測定機器 List of equipment used

	EQUIPMENT USED	MANUFACTURER	MODEL NO.
1	DIGITAL STORAGE OSCILLOSCOPE	YOKOGAWA ELECT.	DLM2054 / DL9040L
2	DIGITAL STORAGE OSCILLOSCOPE	LeCroy	6050A
3	DIGITAL MULTIMETER	AGILENT	34970A
4	CURRENT PROBE	YOKOGAWA ELECT.	701929
5	SHUNT RESISTER	YOKOGAWA ELECT.	2215
6	DYNAMIC DUMMY LOAD	TAKASAGO	FK-600L
7	DC POWER SUPPLY	KIKUSUI	PWR800L
8	CONTROLLED TEMP. CHAMBER	ESPEC	SU-641

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

Vo=3.3V 1. Regulation - line and load Condition Ta : 25 ºC

Io \ Vin	9VDC	12VDC	24VDC	48VDC	Line regulation	
0%	3.303V	3.304V	3.305V	3.307V	4mV	0.121%
50%	3.294V	3.293V	3.294V	3.298V	5mV	0.152%
100%	3.286V	3.285V	3.283V	3.281V	5mV	0.152%
Load regulation	17mV	19mV	22mV	26mV		
	0.515%	0.576%	0.667%	0.788%		

2. Temperature drift Conditions Vin : 24 VDC
Io : 100 %

Ta	-40°C	25°C	85°C	Temperature stability	
Vo	3.253V	3.283V	3.296V	43mV	1.303%

Vo=5V 1. Regulation - line and load Condition Ta : 25 ºC

Io \ Vin	9VDC	12VDC	24VDC	48VDC	Line regulation	
0%	5.005V	5.006V	5.008V	5.012V	7mV	0.140%
50%	4.987V	4.987V	4.988V	4.993V	6mV	0.120%
100%	4.971V	4.971V	4.968V	4.964V	7mV	0.140%
Load regulation	34mV	35mV	40mV	48mV		
	0.680%	0.700%	0.800%	0.960%		

2. Temperature drift Conditions Vin : 24 VDC
Io : 100 %

Ta	-40°C	25°C	85°C	Temperature stability	
Vo	4.920V	4.968V	4.990V	70mV	1.400%

Vo=12V 1. Regulation - line and load Condition Ta : 25 ºC

Io \ Vin	16VDC	24VDC	48VDC	Line regulation	
0%	11.985V	11.990V	11.998V	13mV	0.108%
50%	11.930V	11.929V	11.931V	2mV	0.017%
100%	11.881V	11.873V	11.861V	20mV	0.167%
Load regulation	104mV	117mV	137mV		
	0.867%	0.975%	1.142%		

2. Temperature drift Conditions Vin : 24 VDC
Io : 100 %

Ta	-40°C	25°C	85°C	Temperature stability	
Vo	11.750V	11.873V	11.934V	184mV	1.533%

Vo=15V 1. Regulation - line and load Condition Ta : 25 ºC

Io \ Vin	19VDC	24VDC	48VDC	Line regulation	
0%	15.038V	15.042V	15.049V	11mV	0.073%
50%	14.979V	14.979V	14.976V	3mV	0.020%
100%	14.922V	14.914V	14.900V	22mV	0.147%
Load regulation	116mV	128mV	149mV		
	0.773%	0.853%	0.993%		

2. Temperature drift Conditions Vin : 24 VDC
Io : 100 %

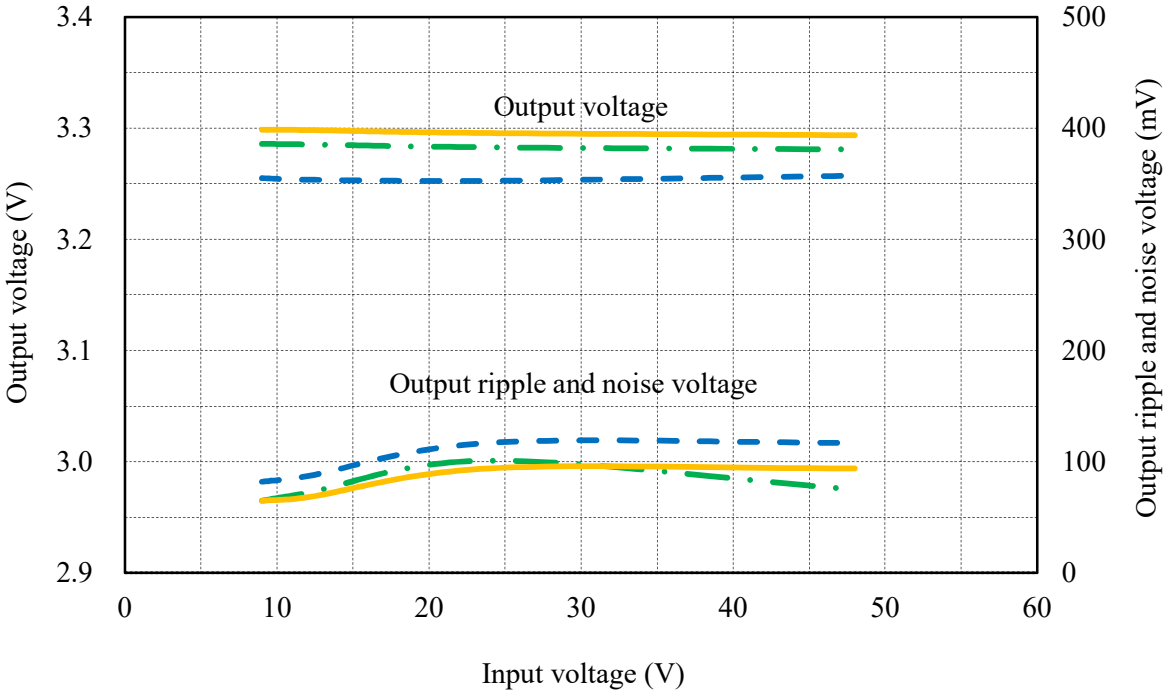
Ta	-40°C	25°C	85°C	Temperature stability	
Vo	14.753V	14.914V	14.986V	233mV	1.553%

(2) 出力電圧・出力リップルノイズ電圧 対 入力電圧

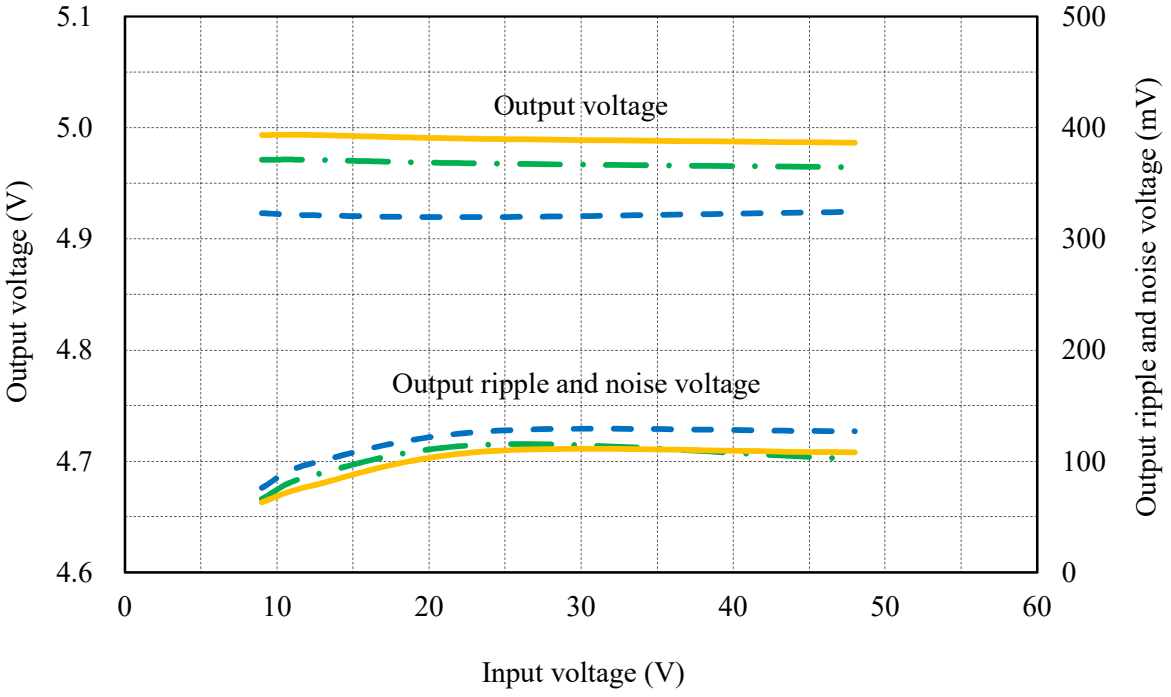
Output voltage and Output ripple and noise voltage vs. Input voltage

Conditions Io : 100 %
Ta : -40 ºC
: 25 ºC
: 85 ºC

Vo=3.3V



Vo=5V

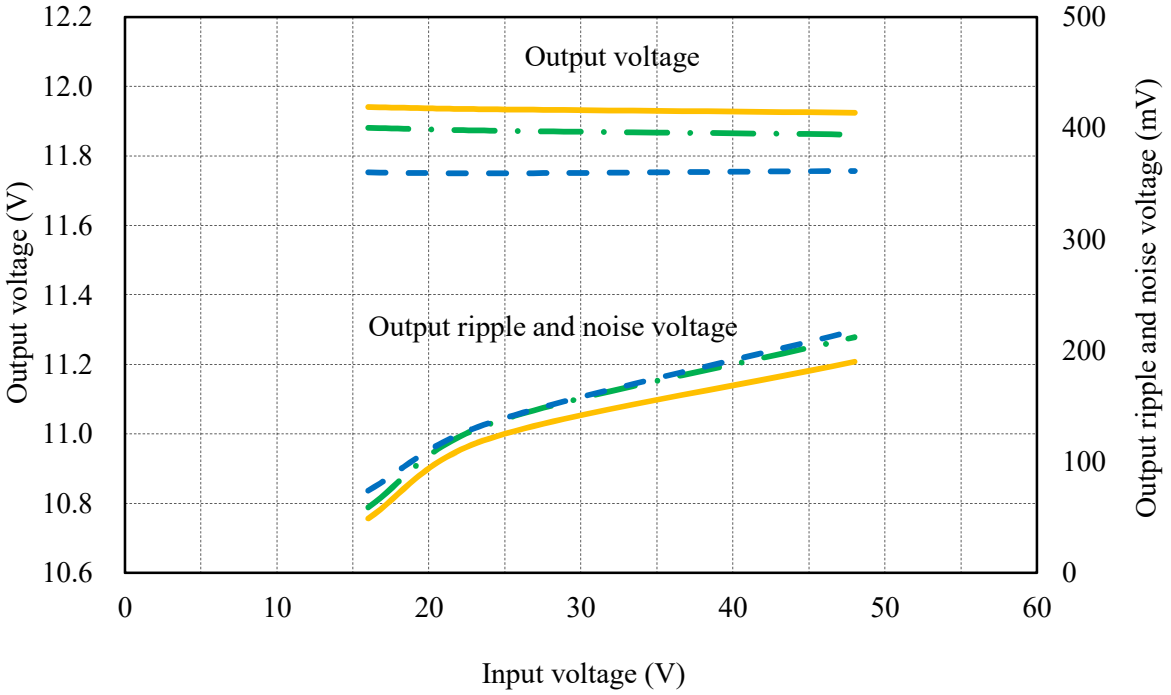


(2) 出力電圧・出力リップルノイズ電圧 対 入力電圧

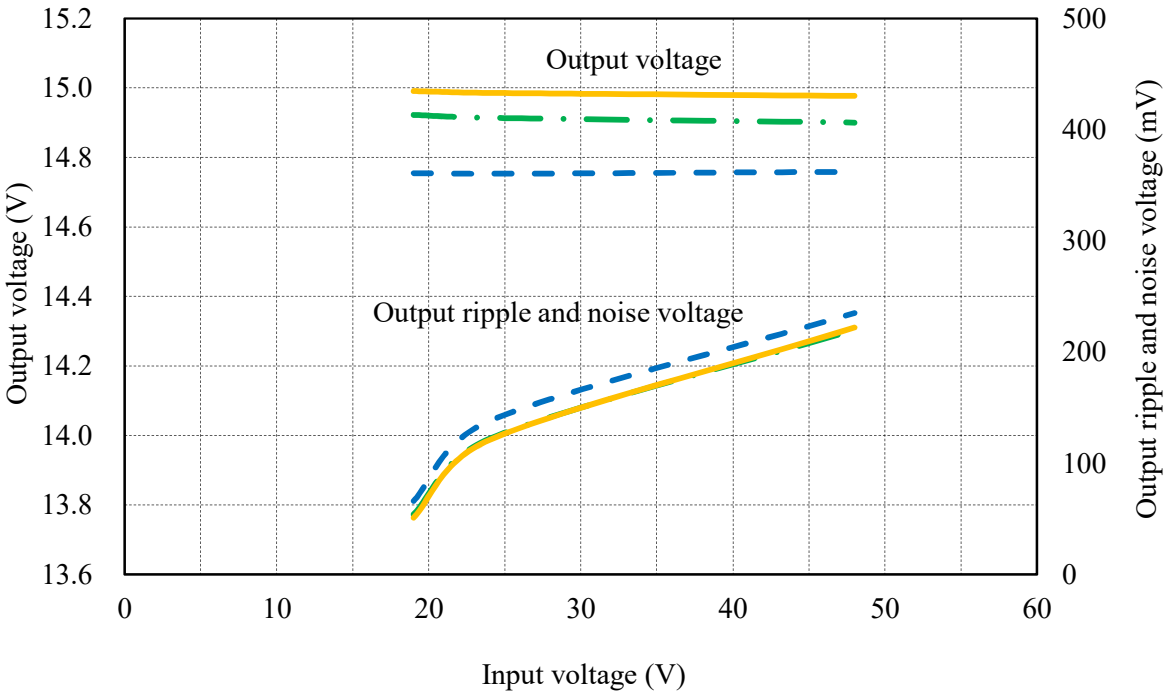
Output voltage and Output ripple and noise voltage vs. Input voltage

Conditions Io : 100 %
Ta : -40 ºC
: 25 ºC
: 85 ºC

Vo=12V



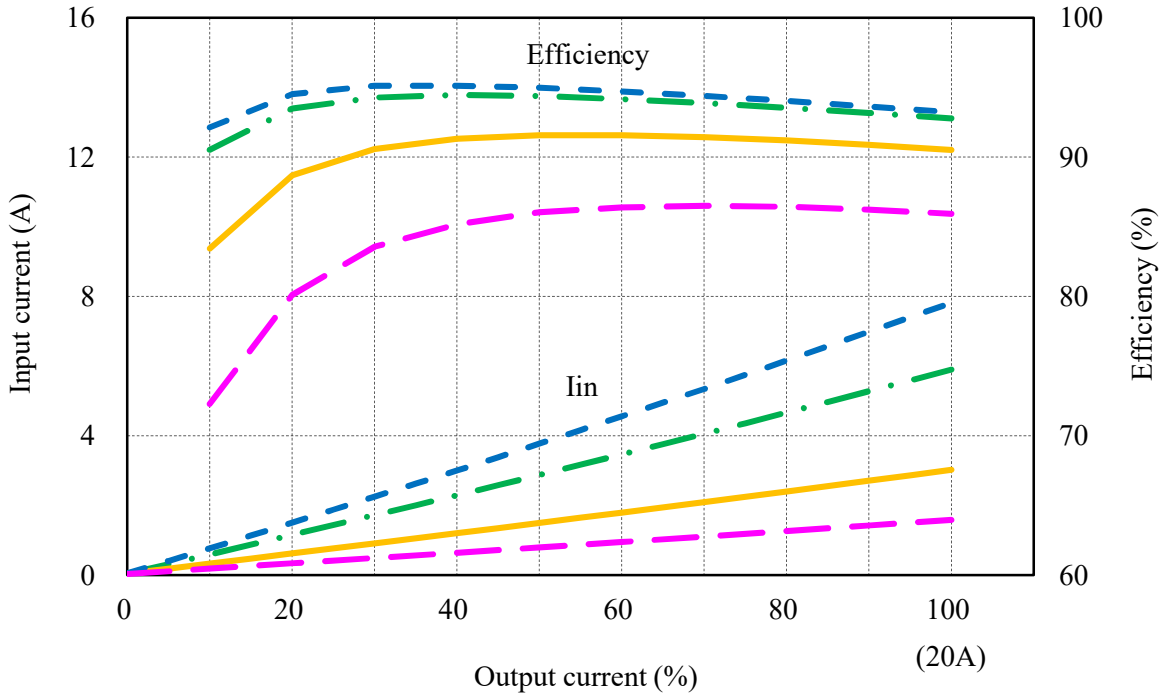
Vo=15V



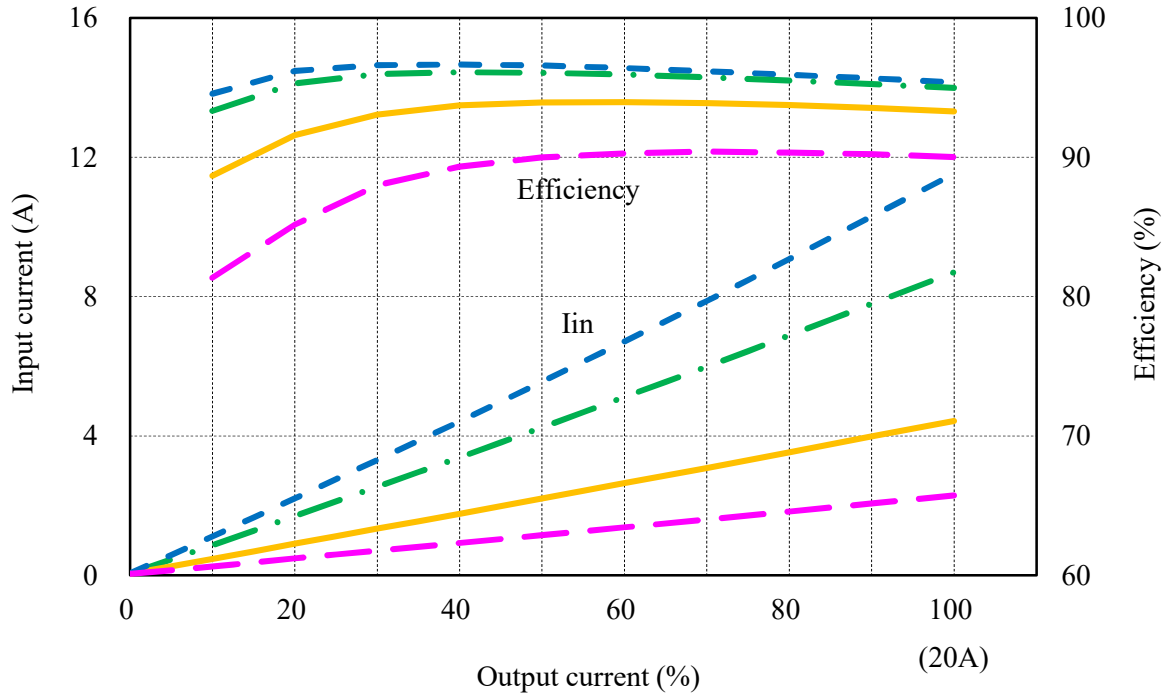
(3) 入力電流･効率 対 出力電流 Input current and Efficiency vs. Output current

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

Vo=3.3V



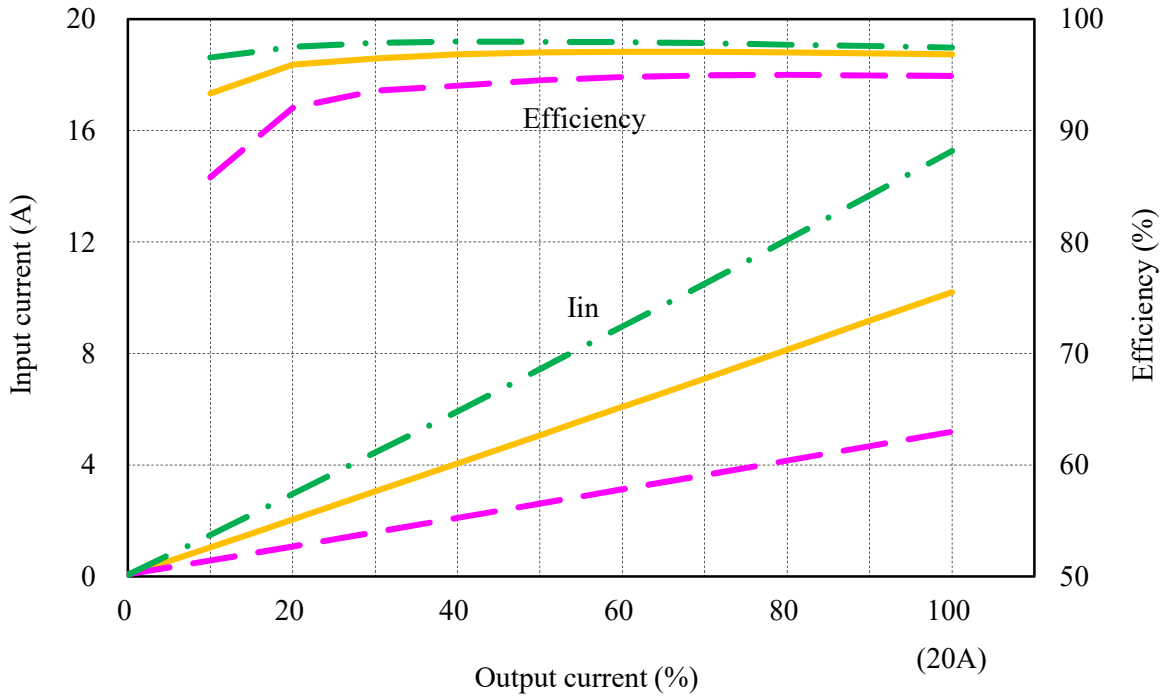
Vo=5V



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

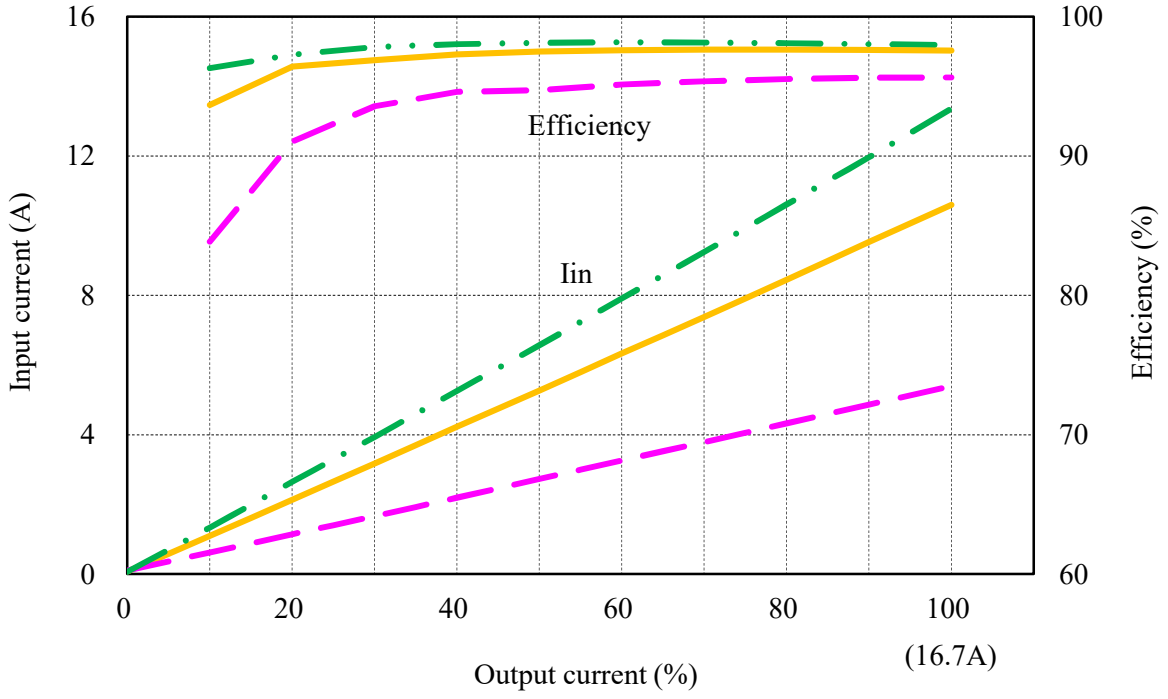
Conditions Vin : 16 VDC
: 24 VDC
: 48 VDC
Ta : 25 ºC

Vo=12V



Conditions Vin : 19 VDC
: 24 VDC
: 48 VDC
Ta : 25 ºC

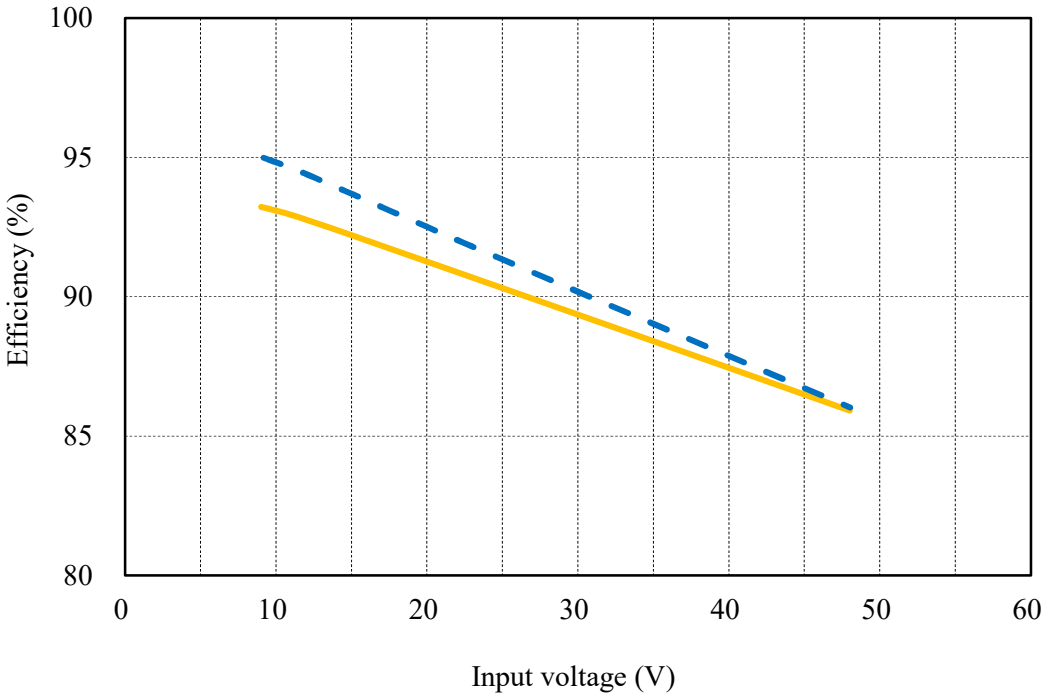
Vo=15V



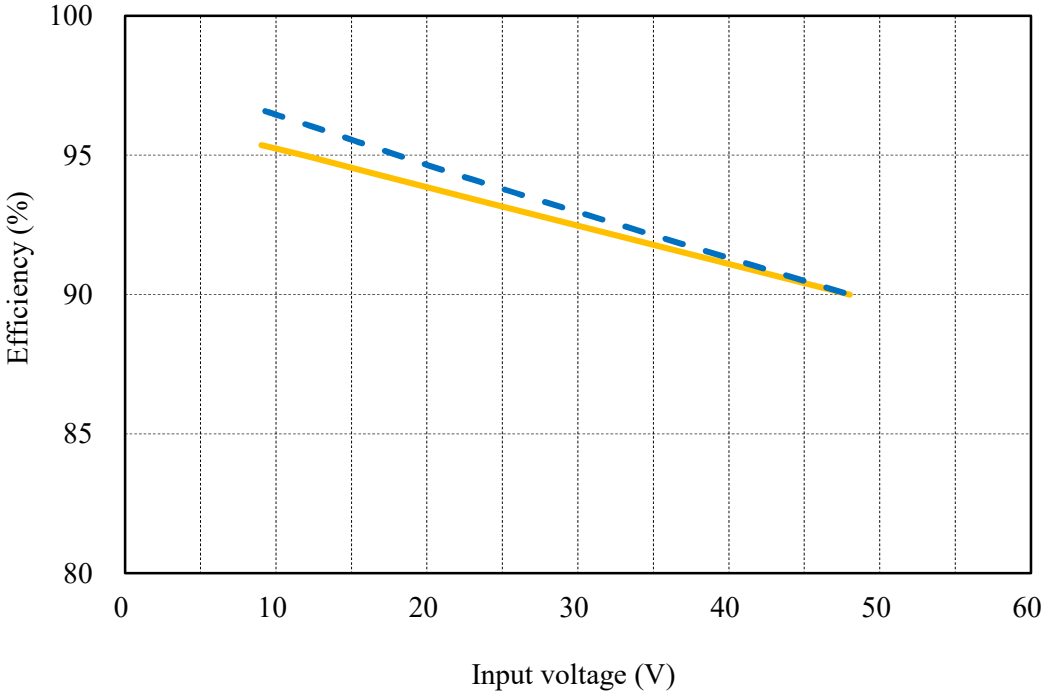
(4) 効率 対 入力電圧 Efficiency vs. Input voltage

Conditions Io : 50 %
: 100 %
Ta : 25 ºC

Vo=3.3V



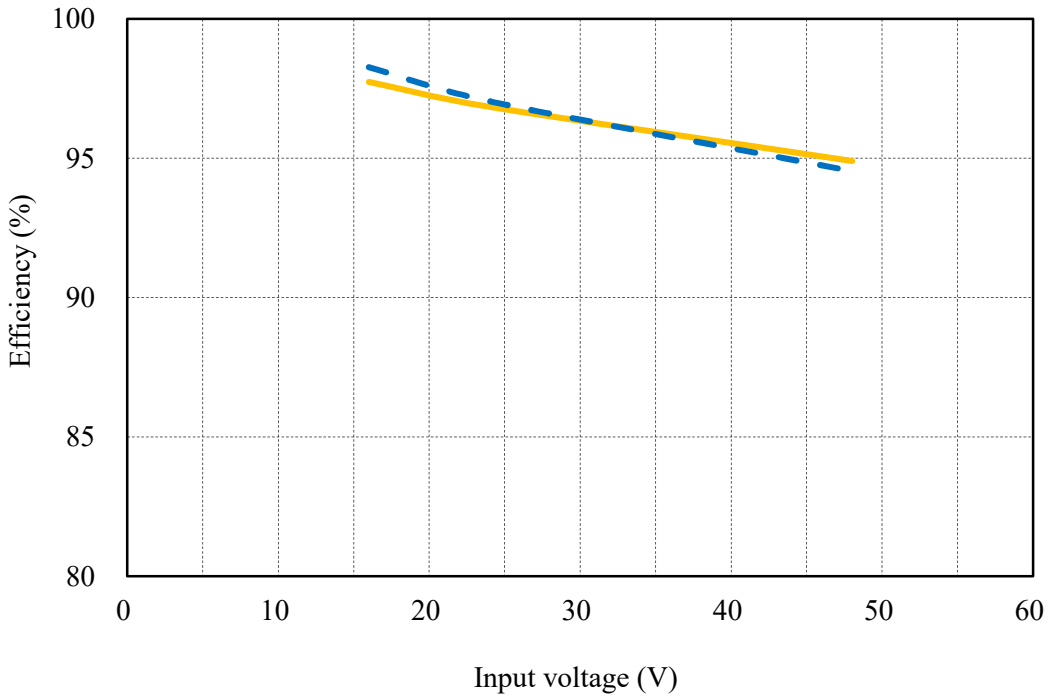
Vo=5V



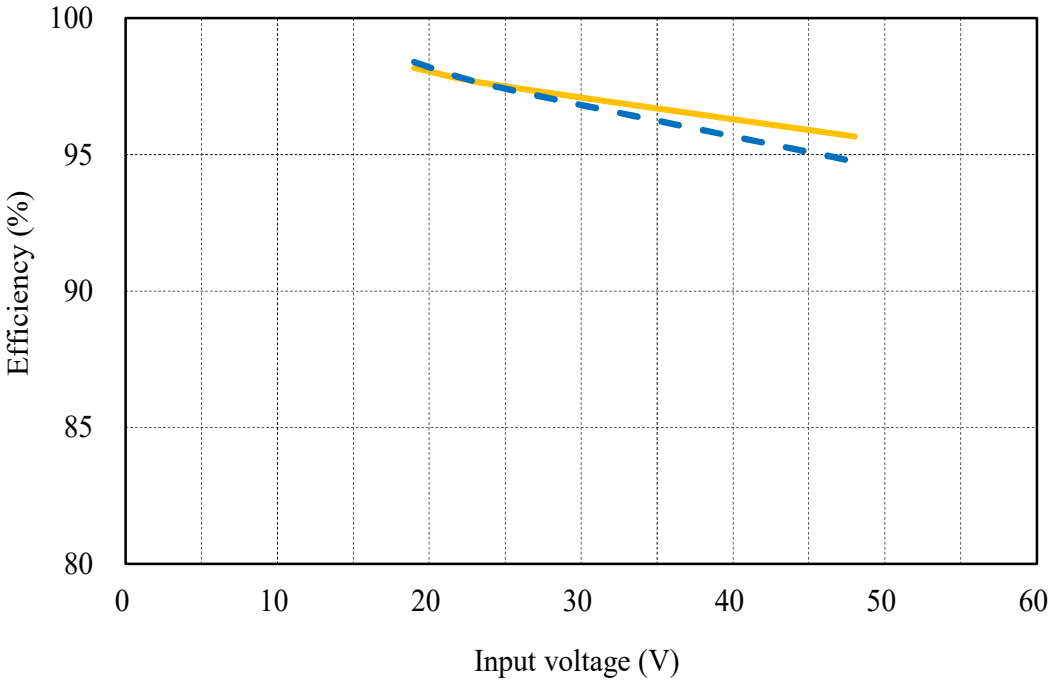
(4) 効率 対 入力電圧 Efficiency vs. Input voltage

Conditions Io : 50 %
: 100 %
Ta : 25 ºC

Vo=12V



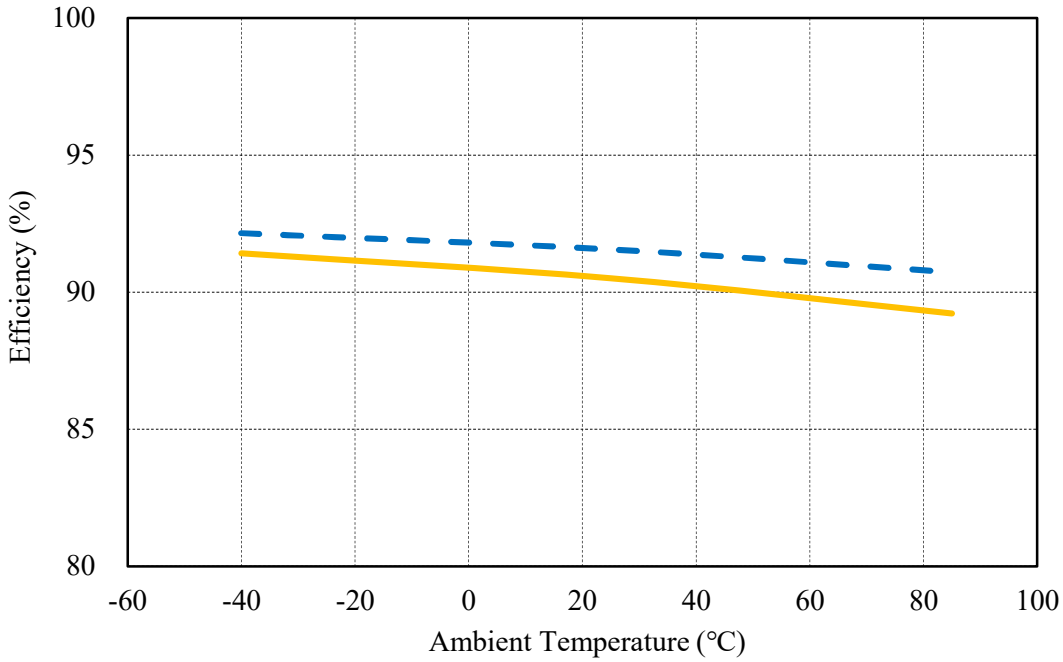
Vo=15V



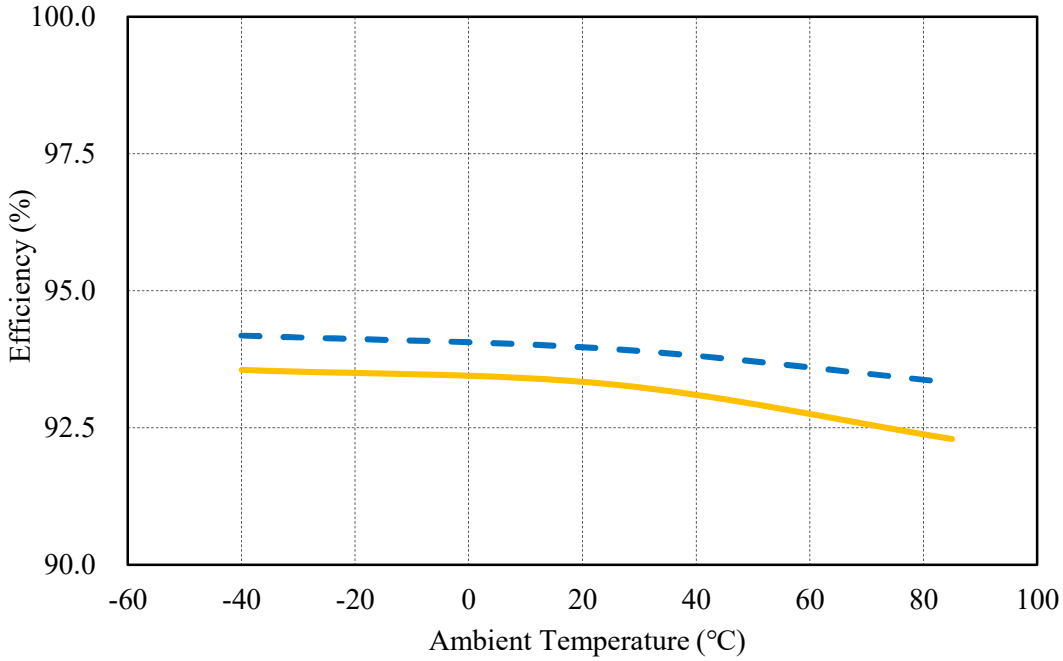
(5) 効率 対 温度 Efficiency vs. Temperature

Conditions Vin : 24 VDC
Io : 50 %
: 100 %

Vo=3.3V



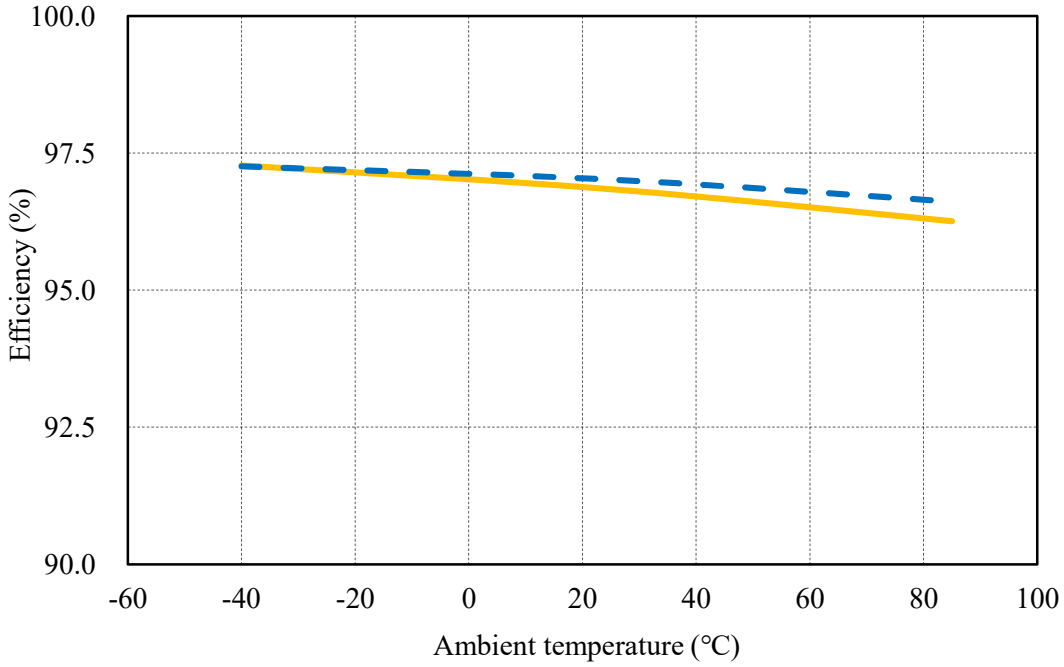
Vo=5V



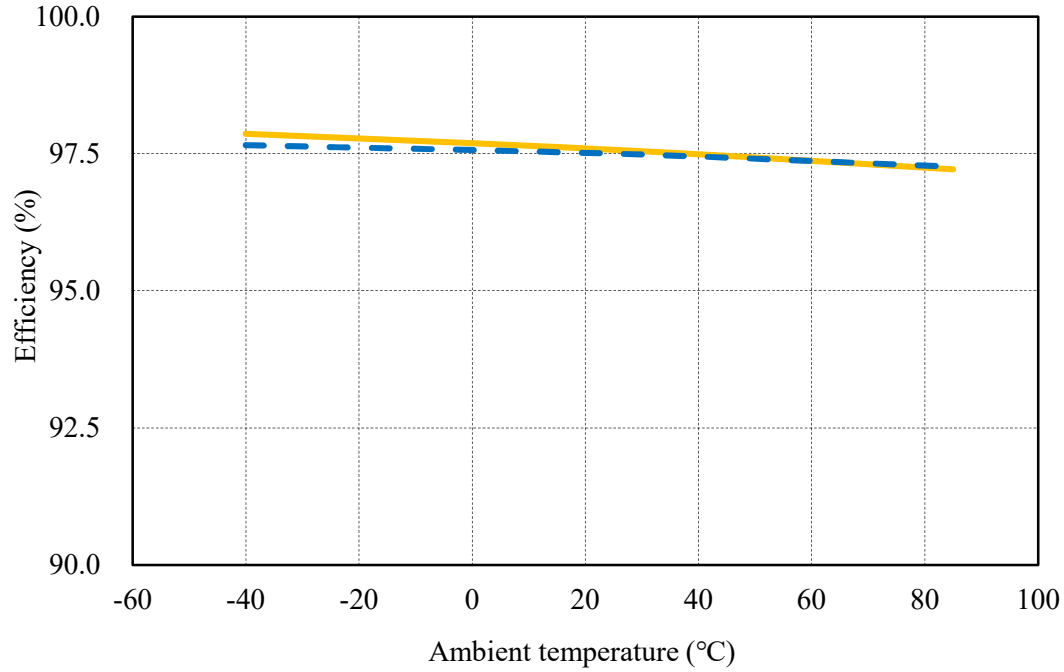
(5) 効率 対 温度 Efficiency vs. Temperature

Conditions Vin : 24 VDC
Io : 50 %
: 100 %

Vo=12V



Vo=15V



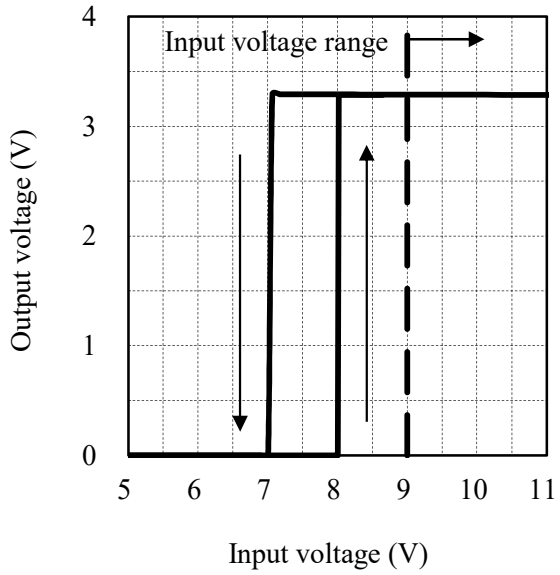
(6) 起動・遮断電圧特性 Start up and Drop out voltage characteristics

出力電圧 対 入力電圧

Output voltage vs. Input voltage

Conditions Io : 100 %
Ta : 25 ºC

Vo=3.3V

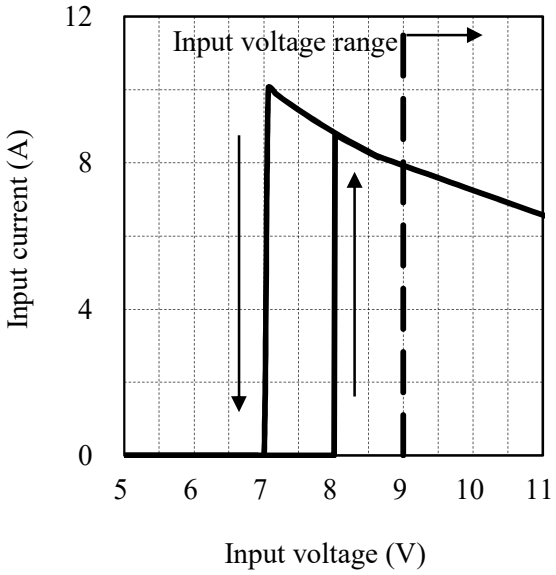


入力電流 対 入力電圧

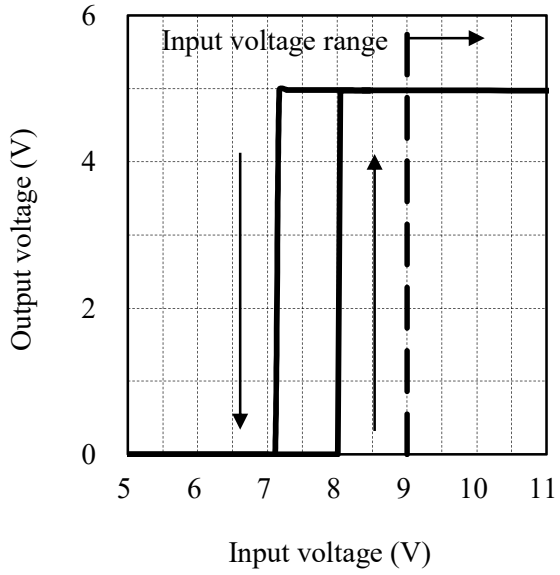
Input current vs. Input voltage

Conditions Io : 100 %
Ta : 25 ºC

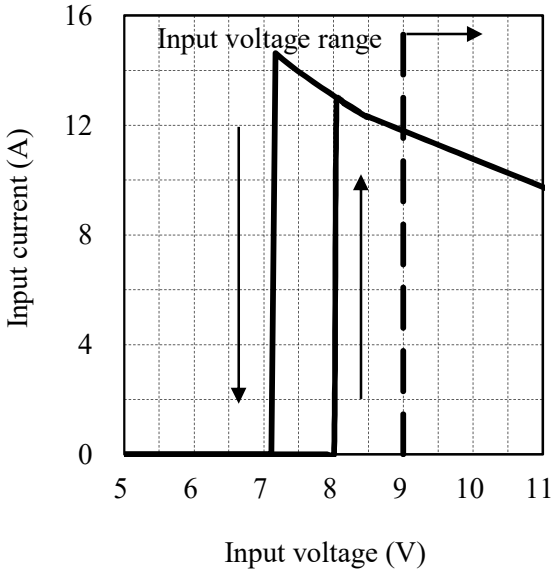
Vo=3.3V



Vo=5V



Vo=5V



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

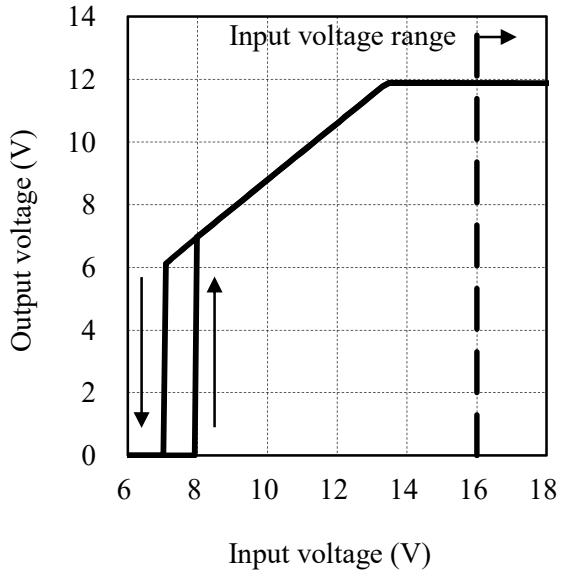
出力電圧 対 入力電圧

Output voltage vs. Input voltage

Conditions Io : 100 %

Ta : 25 ºC

Vo=12V



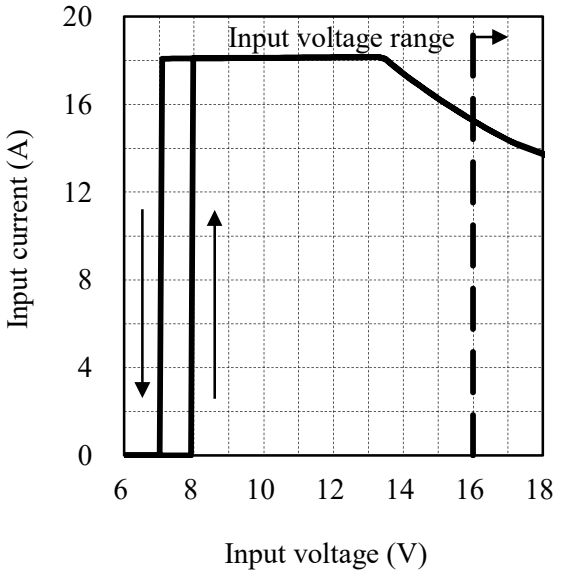
入力電流 対 入力電圧

Input current vs. Input voltage

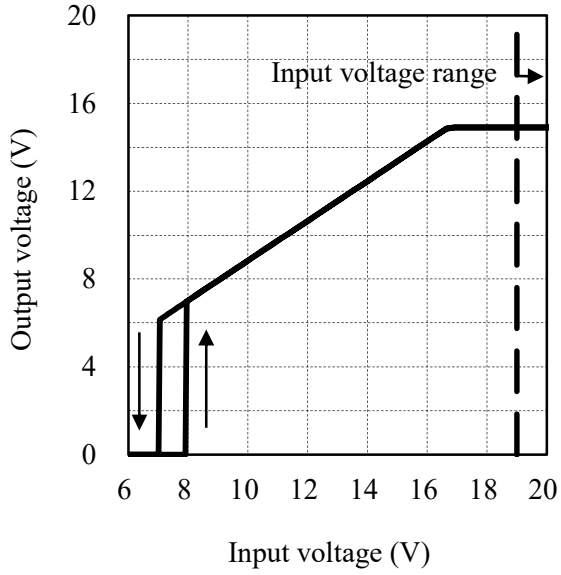
Conditions Io : 100 %

Ta : 25 ºC

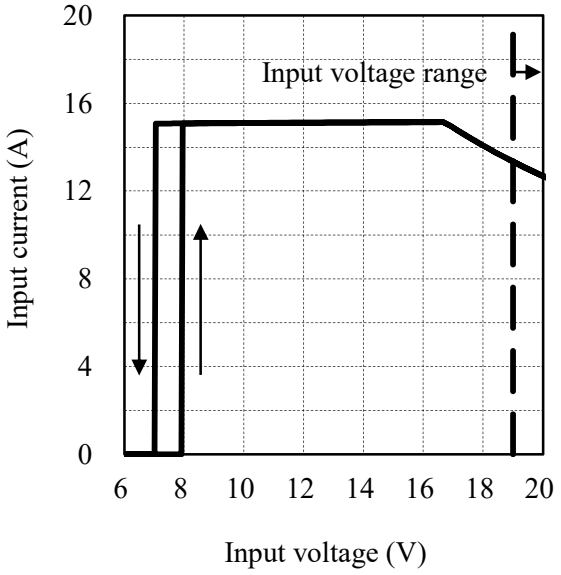
Vo=12V



Vo=15V

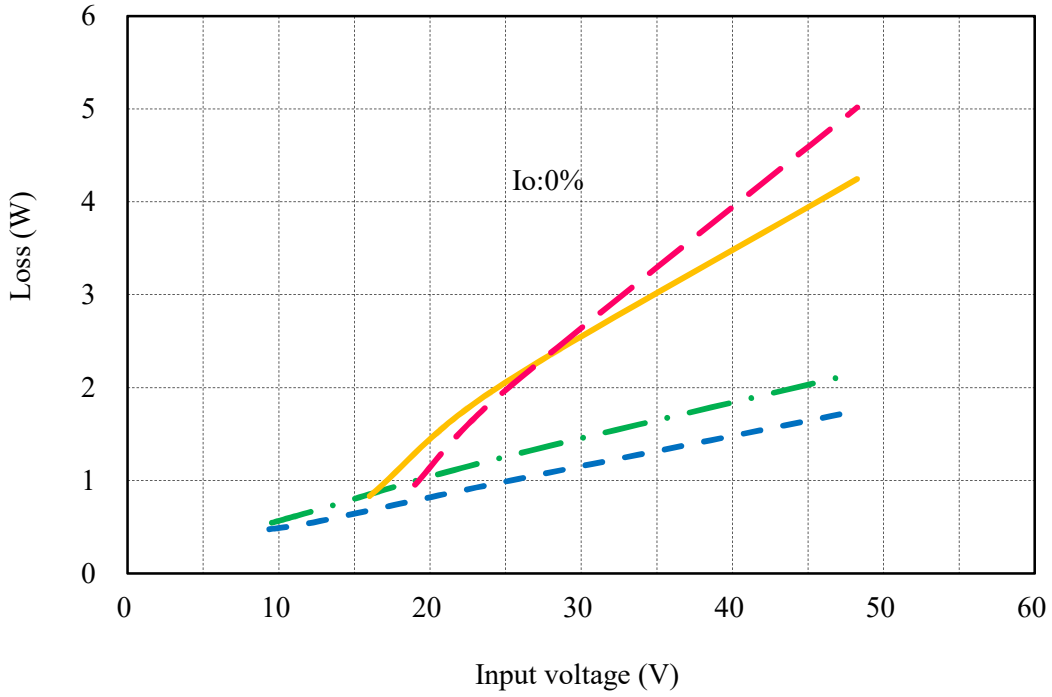


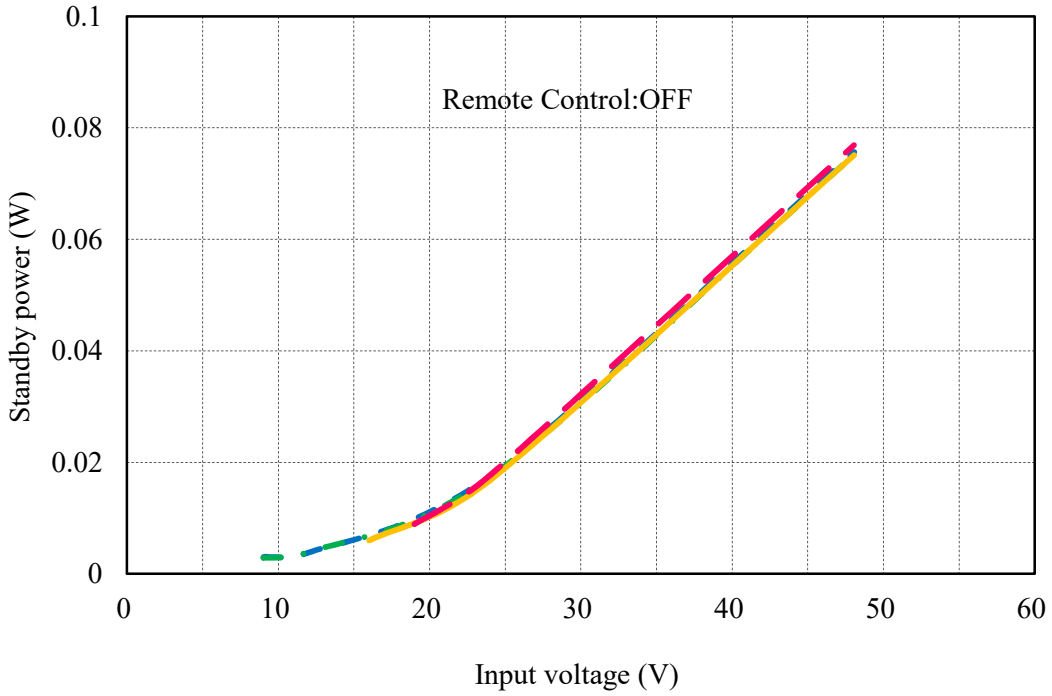
Vo=15V



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

Conditions Vo : 3.3 VDC
: 5 VDC
: 12 VDC
: 15 VDC
Ta : 25 ºC

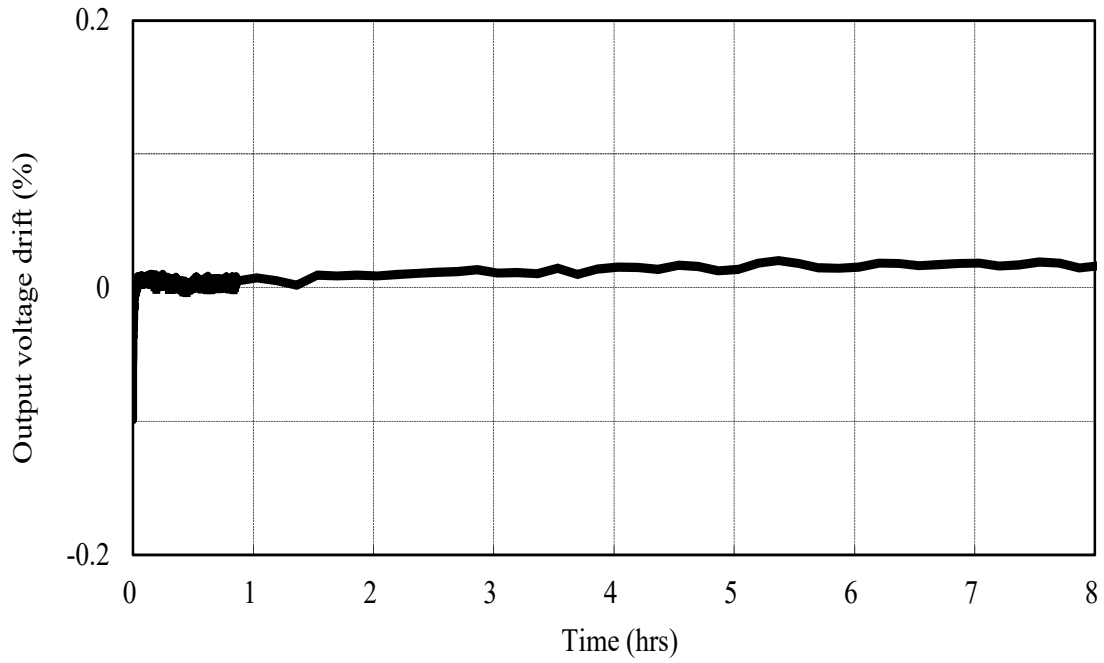




2-3. 通電ドリフト特性 Warm up voltage drift characteristics

Conditions Vin : 24 VDC
Io : 100 %
Ta : 25 ºC

Vo=12V



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

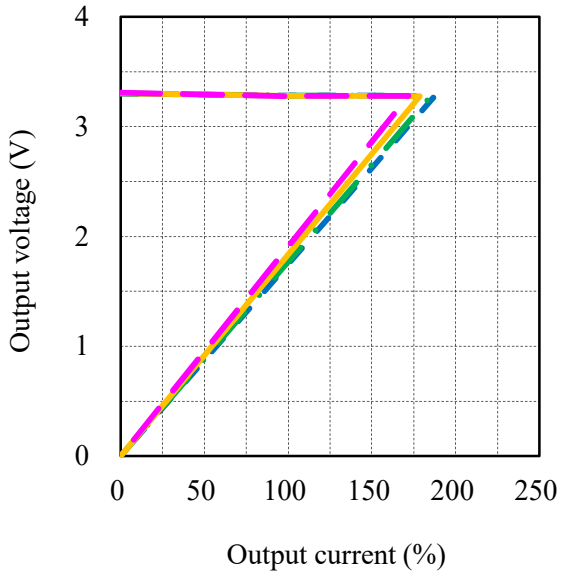
入力電圧依存性
Input voltage dependence

Conditions Vin : 9 VDC
: 12 VDC
: 24 VDC
: 48 VDC
Ta : 25 ºC

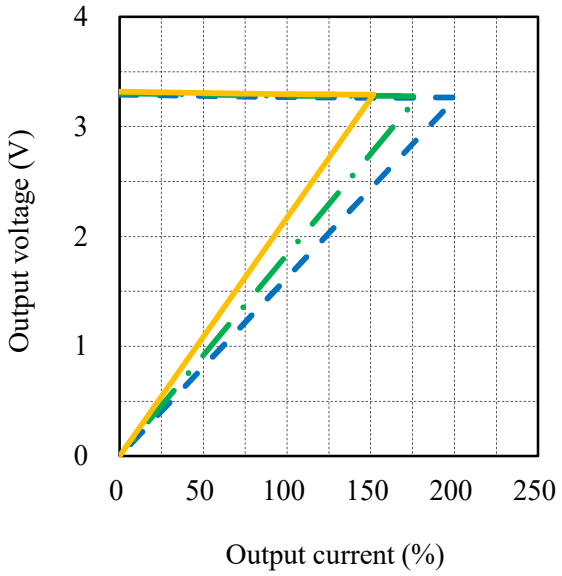
周囲温度依存性
Ambient temperature dependence

Conditions Vin : 24 VDC
Ta : -40 ºC
25 ºC
85 ºC

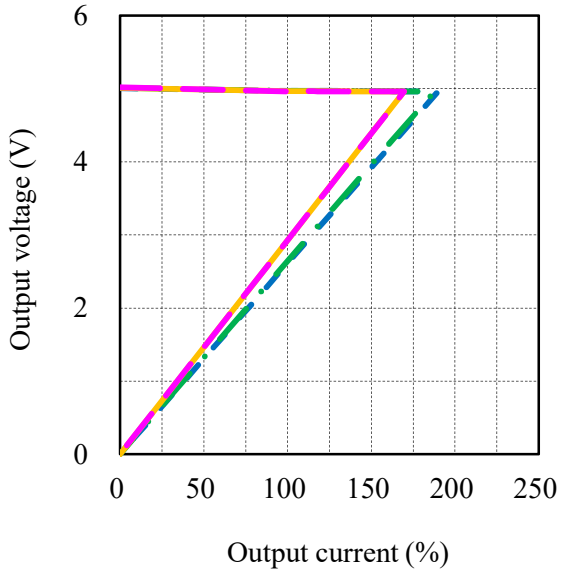
Vo=3.3V



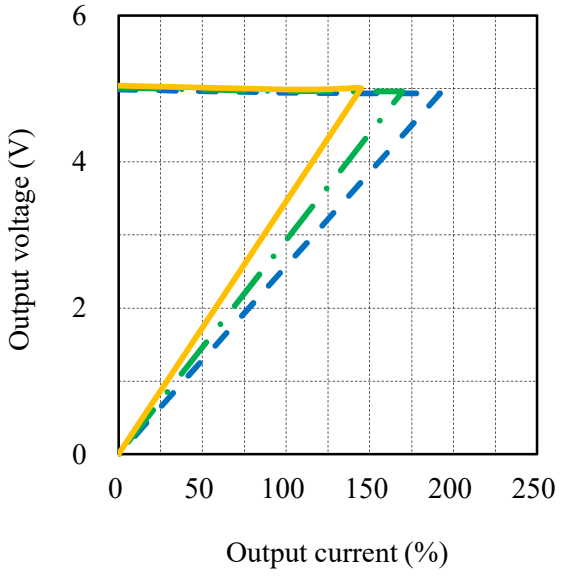
Vo=3.3V



Vo=5V



Vo=5V



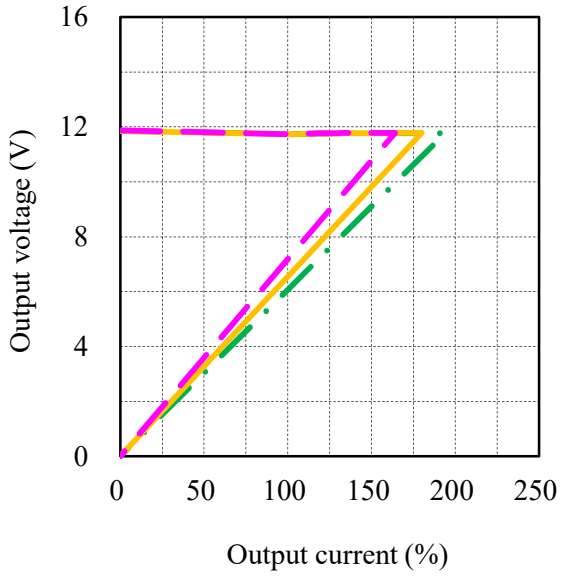
2-4. 過電流保護特性 Over current protection (OCP) characteristics

入力電圧依存性

Input voltage dependence

Conditions Vin : 16 VDC
: 24 VDC
: 48 VDC
Ta : 25 ºC

Vo=12V

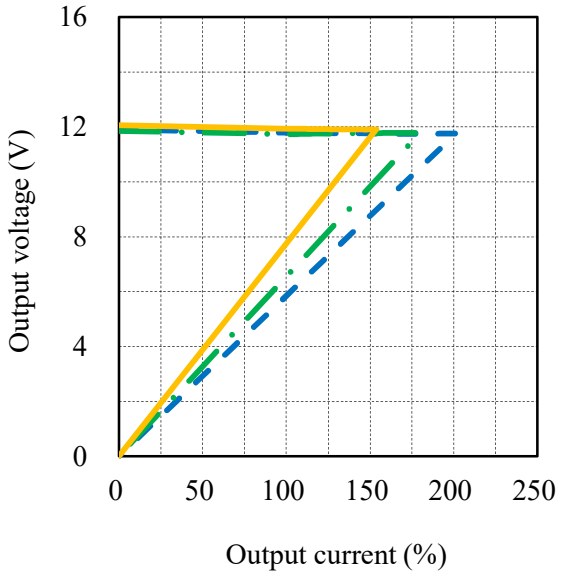


周囲温度依存性

Ambient temperature dependence

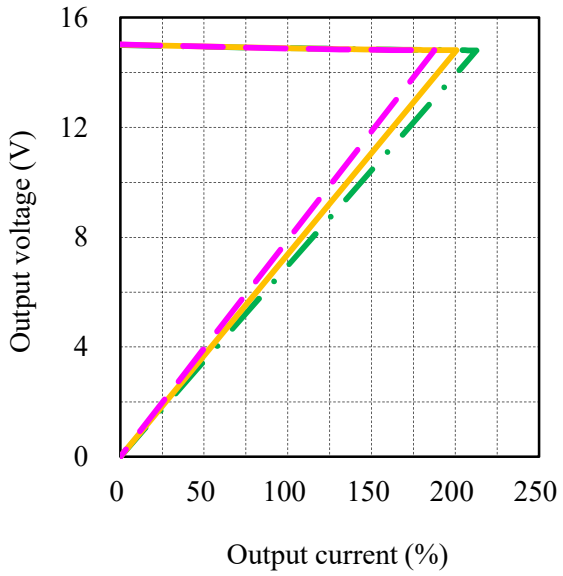
Conditions Vin : 24 VDC
Ta : -40 ºC
25 ºC
85 ºC

Vo=12V



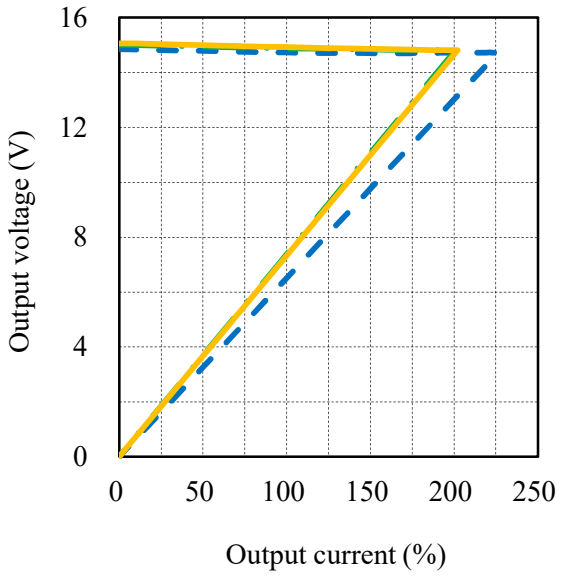
Conditions Vin : 19 VDC
: 24 VDC
: 48 VDC
Ta : 25 ºC

Vo=15V



Conditions Vin : 24 VDC
Ta : -40 ºC
25 ºC
85 ºC

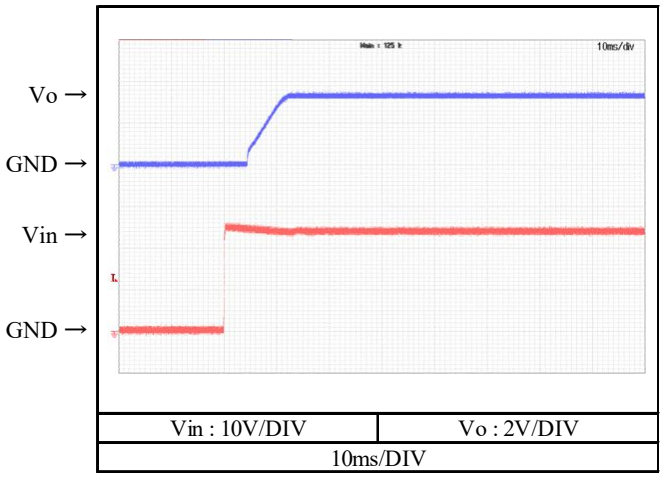
Vo=15V



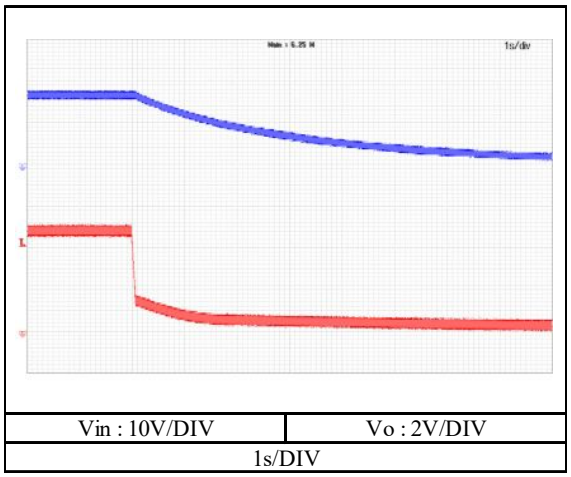
2-5. 出力立ち上がり・立ち下がり特性 Output rise and fall characteristics

Conditions Vin : 24 VDC
Io : 0 %
Ta : 25 ºC

Vo=3.3V

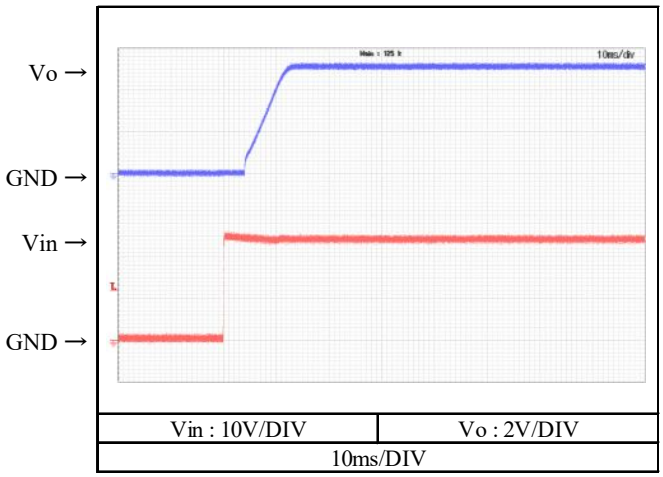


Vin : 10V/DIV	Vo : 2V/DIV
10ms/DIV	

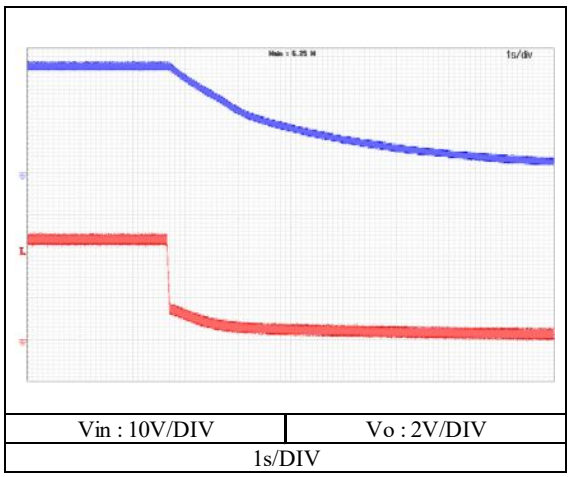


Vin : 10V/DIV	Vo : 2V/DIV
1s/DIV	

Vo=5V



Vin : 10V/DIV	Vo : 2V/DIV
10ms/DIV	

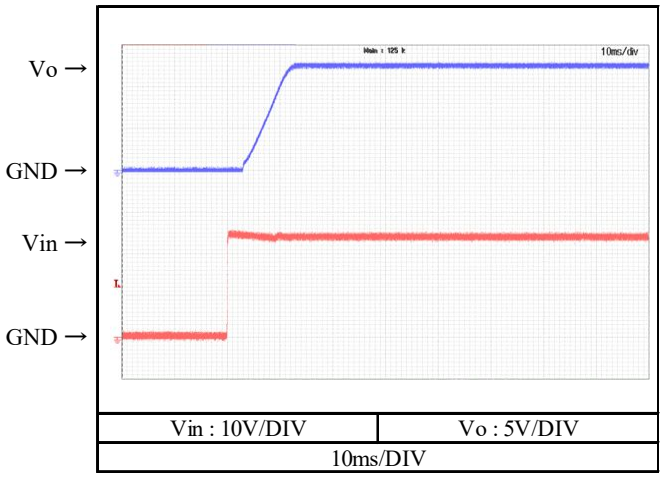


Vin : 10V/DIV	Vo : 2V/DIV
1s/DIV	

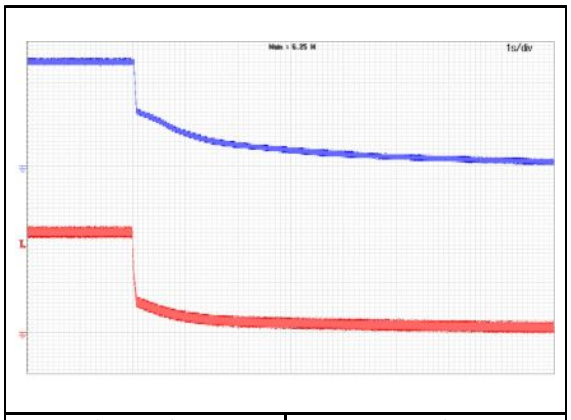
2-5. 出力立ち上がり・立ち下がり特性 Output rise and fall characteristics

Conditions Vin : 24 VDC
Io : 0 %
Ta : 25 ºC

Vo=12V

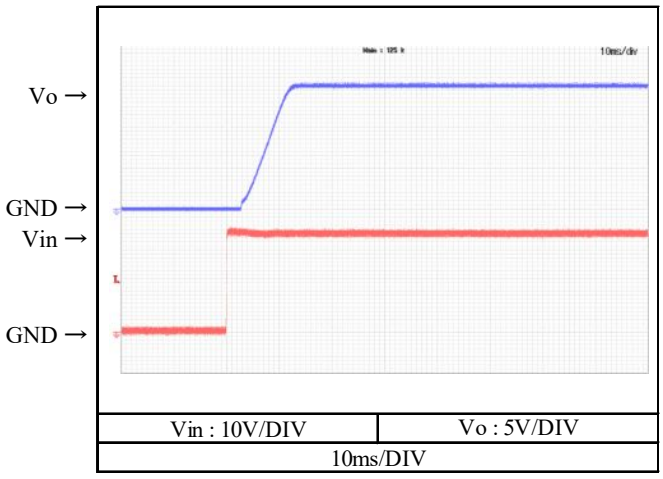


Vin : 10V/DIV	Vo : 5V/DIV
10ms/DIV	

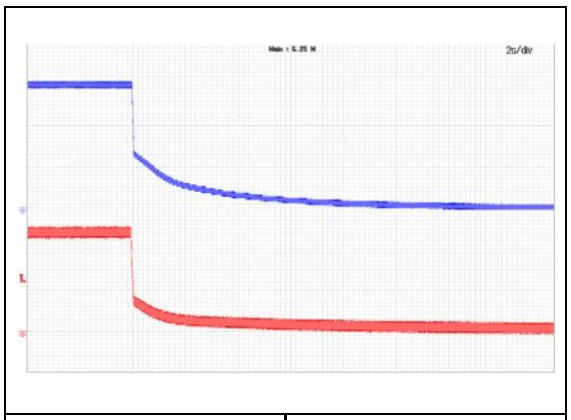


Vin : 10V/DIV	Vo : 5V/DIV
1s/DIV	

Vo=15V



Vin : 10V/DIV	Vo : 5V/DIV
10ms/DIV	

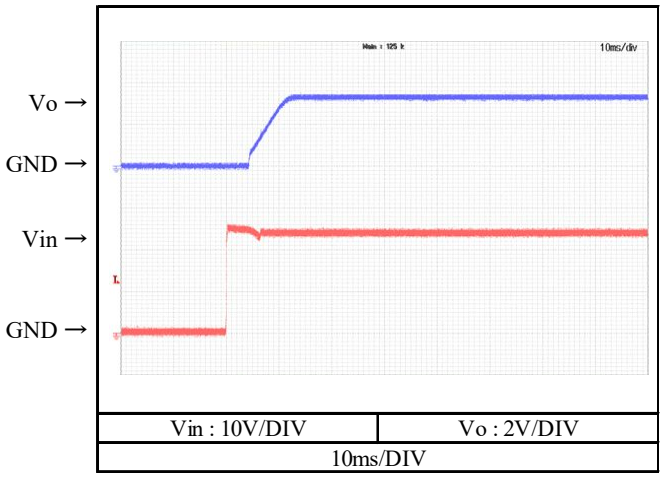


Vin : 10V/DIV	Vo : 5V/DIV
1s/DIV	

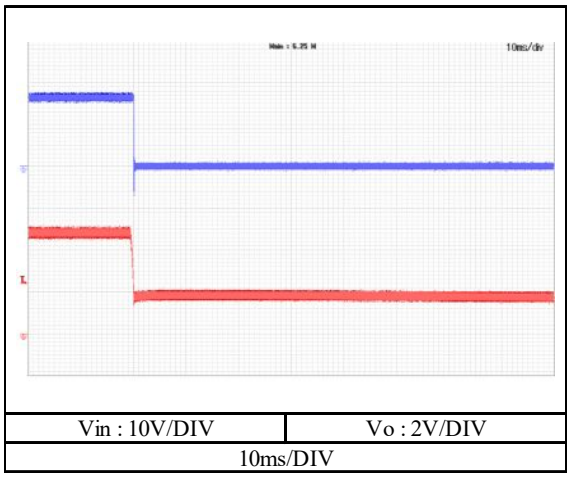
2-5. 出力立ち上がり・立ち下がり特性 Output rise and fall characteristics

Conditions Vin : 24 VDC
Io : 100 %
Ta : 25 ºC

Vo=3.3V

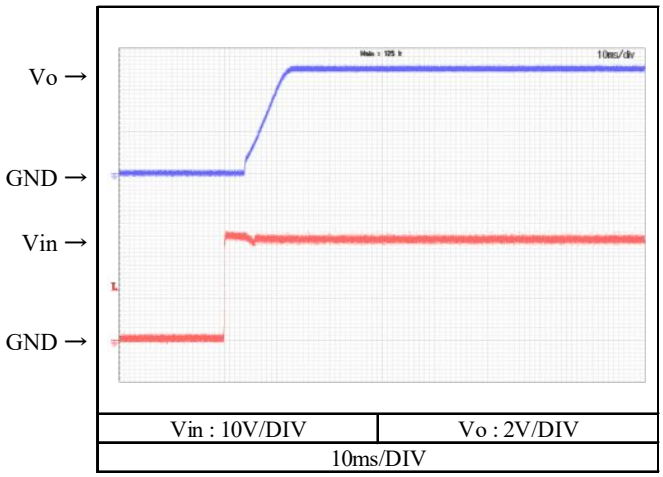


Vin : 10V/DIV	Vo : 2V/DIV
10ms/DIV	

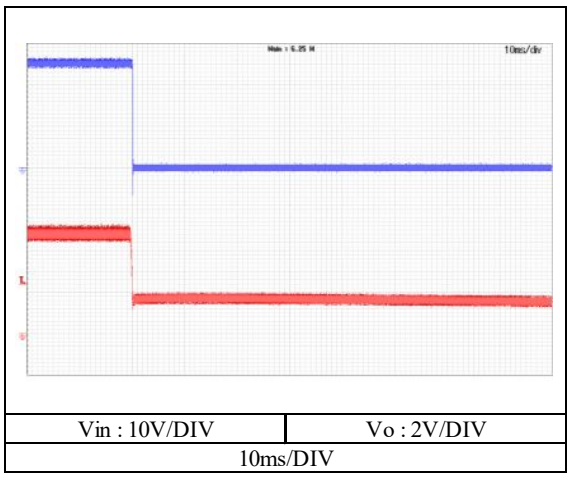


Vin : 10V/DIV	Vo : 2V/DIV
10ms/DIV	

Vo=5V



Vin : 10V/DIV	Vo : 2V/DIV
10ms/DIV	

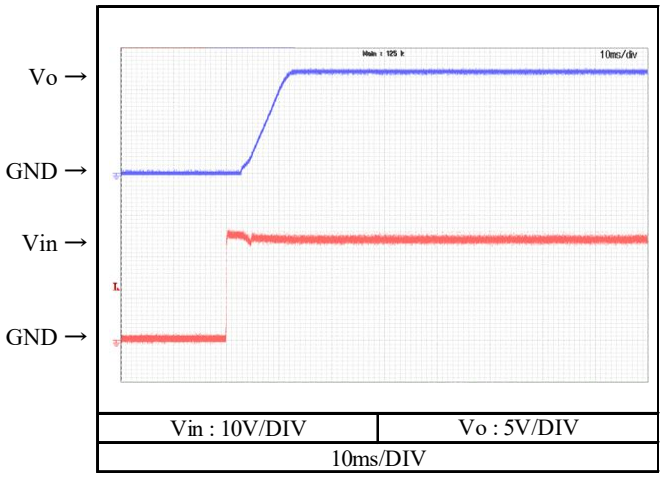


Vin : 10V/DIV	Vo : 2V/DIV
10ms/DIV	

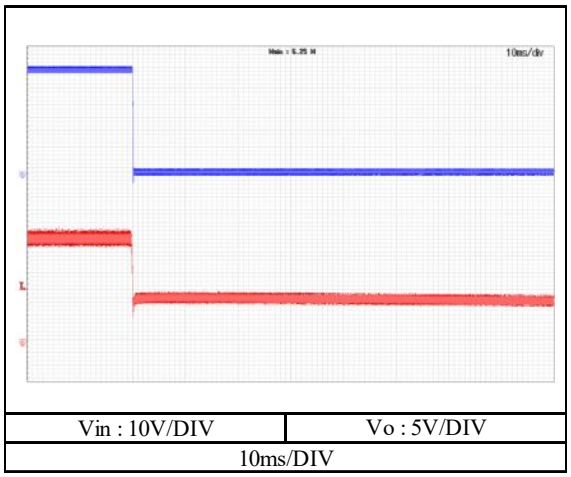
2-5. 出力立ち上がり・立ち下がり特性 Output rise and fall characteristics

Conditions Vin : 24 VDC
Io : 100 %
Ta : 25 ºC

Vo=12V

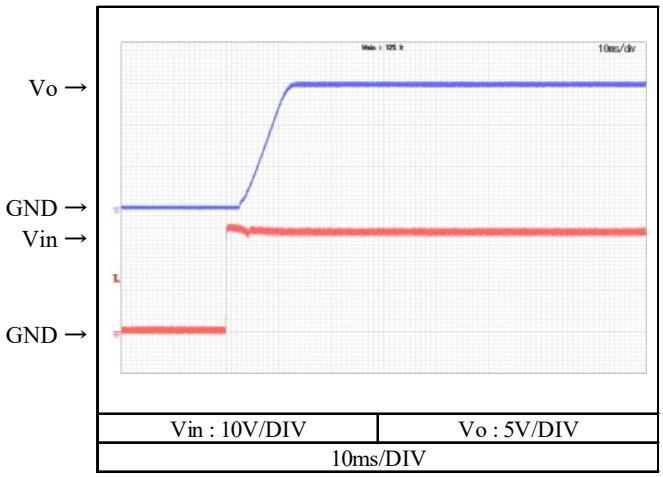


Vin : 10V/DIV	Vo : 5V/DIV
10ms/DIV	

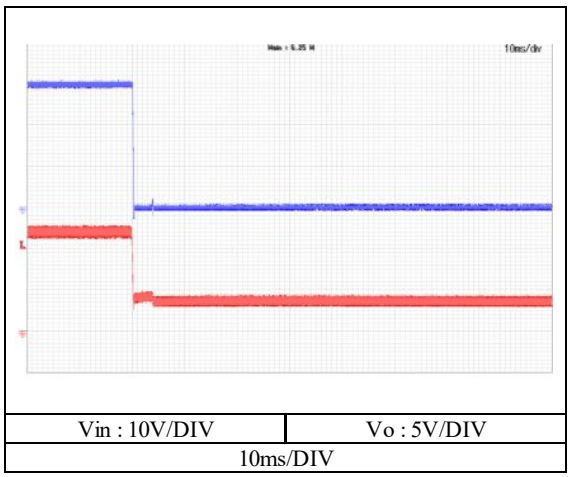


Vin : 10V/DIV	Vo : 5V/DIV
10ms/DIV	

Vo=15V



Vin : 10V/DIV	Vo : 5V/DIV
10ms/DIV	



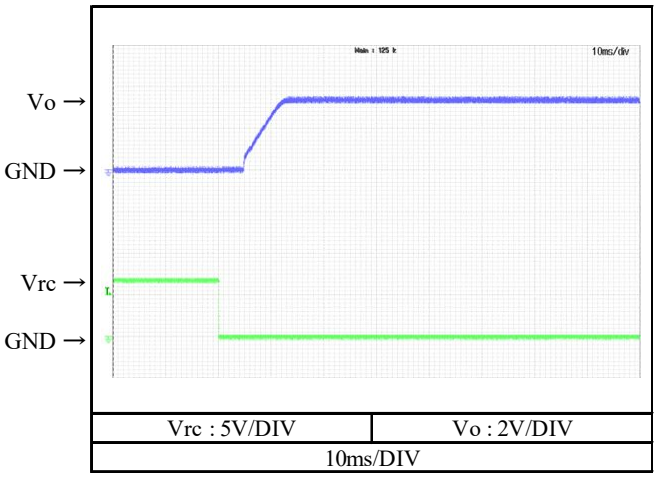
Vin : 10V/DIV	Vo : 5V/DIV
10ms/DIV	

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)

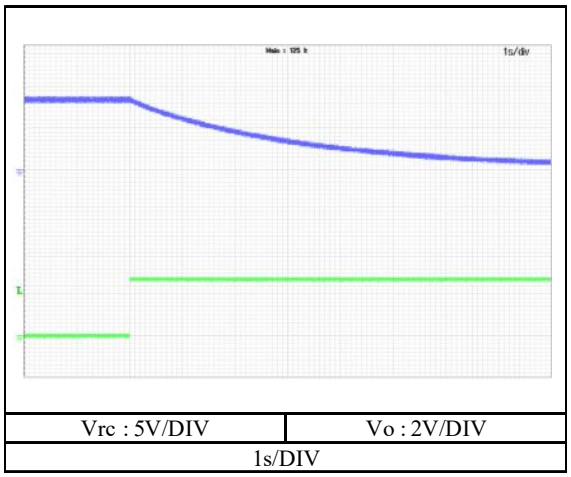
Output rise and fall characteristics with REMOTE ON/OFF CONTROL

Conditions Vin : 24 VDC
Io : 0 %
Ta : 25 ºC

Vo=3.3V

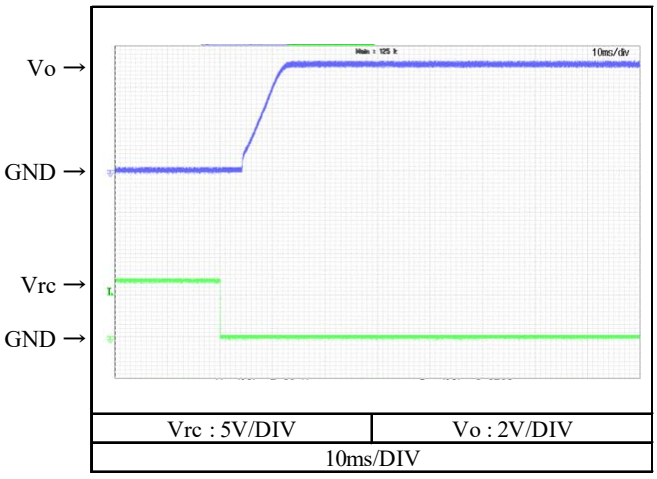


Vrc : 5V/DIV	Vo : 2V/DIV
10ms/DIV	

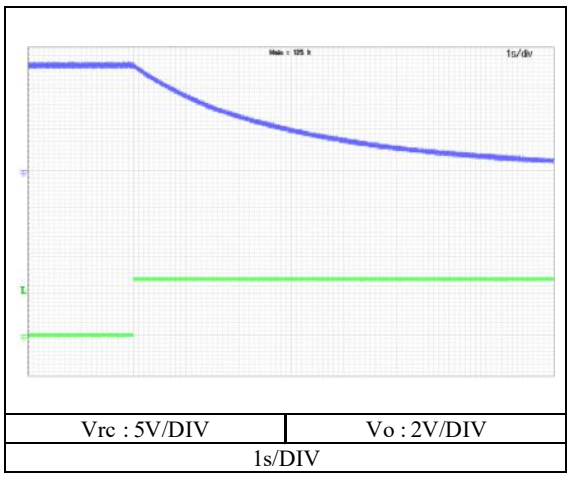


Vrc : 5V/DIV	Vo : 2V/DIV
1s/DIV	

Vo=5V



Vrc : 5V/DIV	Vo : 2V/DIV
10ms/DIV	



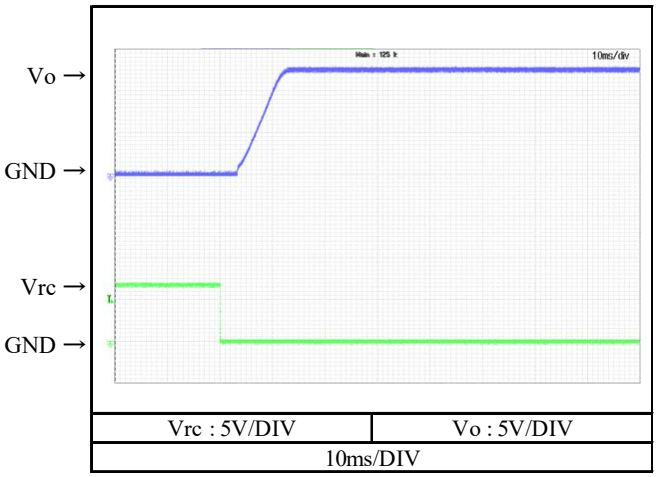
Vrc : 5V/DIV	Vo : 2V/DIV
1s/DIV	

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)

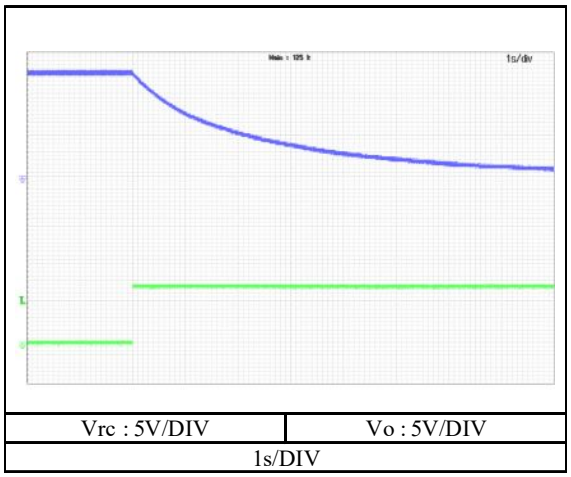
Output rise and fall characteristics with REMOTE ON/OFF CONTROL

Conditions Vin : 24 VDC
Io : 0 %
Ta : 25 ºC

Vo=12V

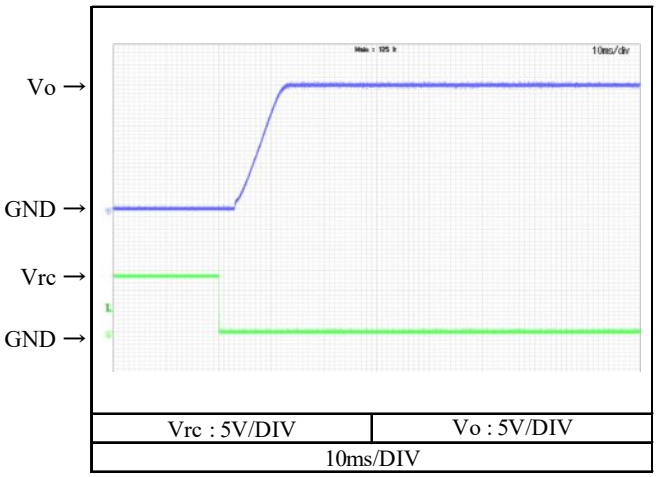


Vrc : 5V/DIV	Vo : 5V/DIV
10ms/DIV	

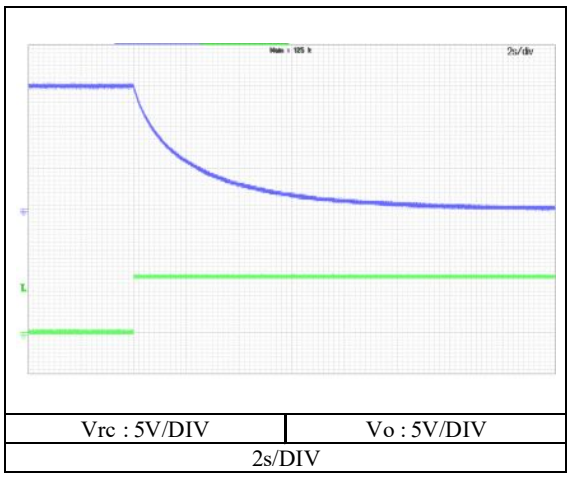


Vrc : 5V/DIV	Vo : 5V/DIV
1s/DIV	

Vo=15V



Vrc : 5V/DIV	Vo : 5V/DIV
10ms/DIV	



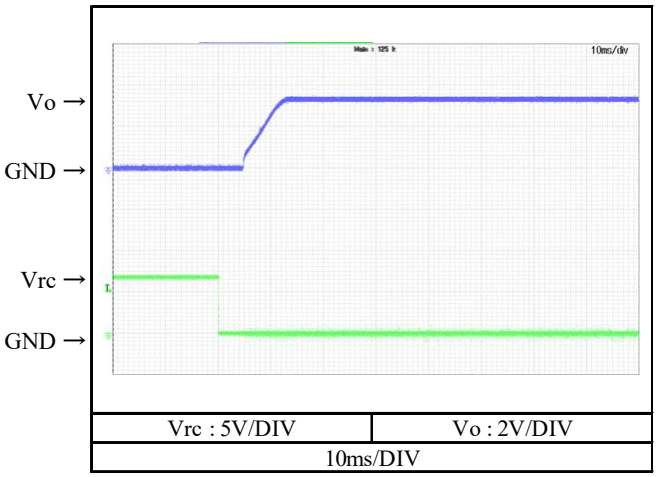
Vrc : 5V/DIV	Vo : 5V/DIV
2s/DIV	

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)

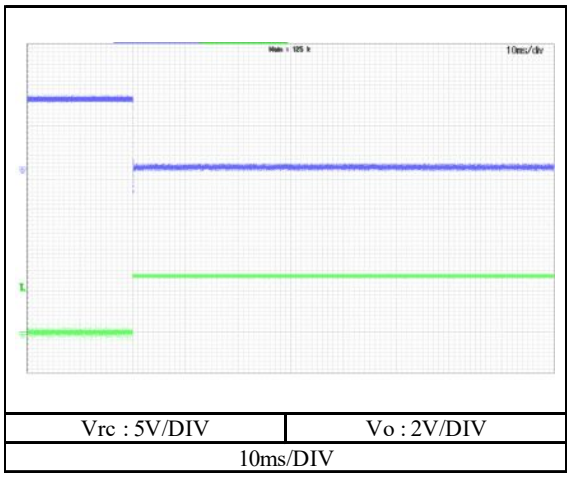
Output rise and fall characteristics with REMOTE ON/OFF CONTROL

Conditions Vin : 24 VDC
Io : 100 %
Ta : 25 ºC

Vo=3.3V

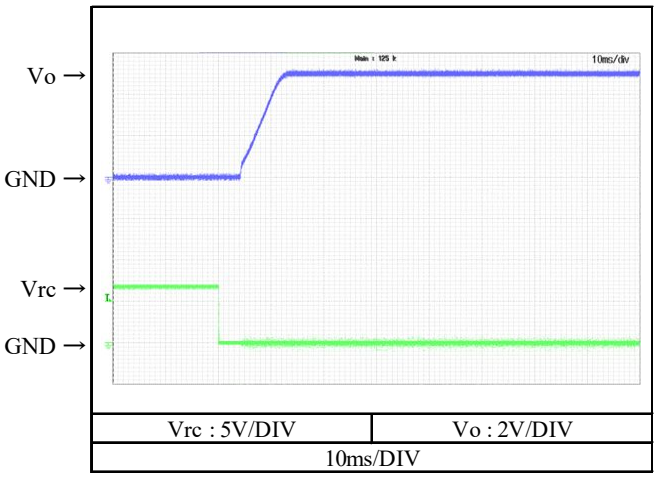


Vrc : 5V/DIV	Vo : 2V/DIV
10ms/DIV	

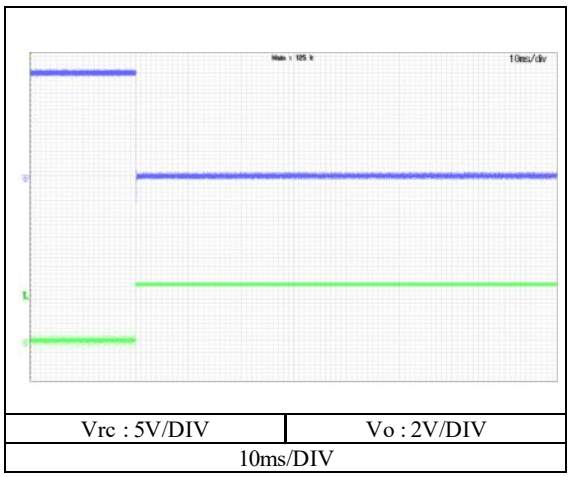


Vrc : 5V/DIV	Vo : 2V/DIV
10ms/DIV	

Vo=5V



Vrc : 5V/DIV	Vo : 2V/DIV
10ms/DIV	



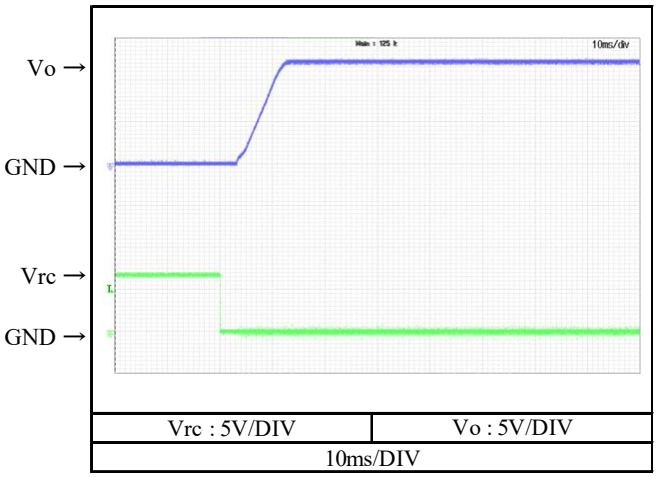
Vrc : 5V/DIV	Vo : 2V/DIV
10ms/DIV	

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)

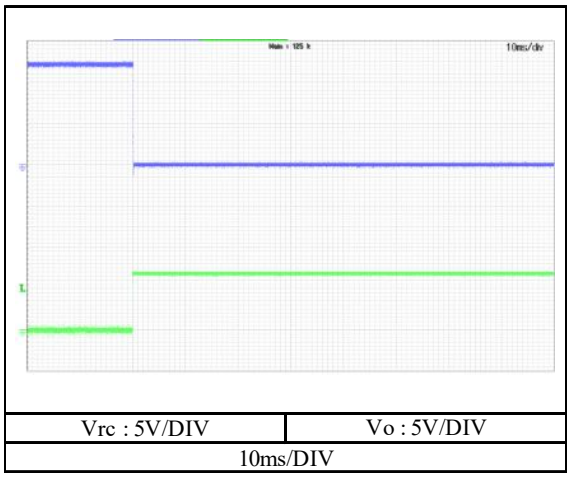
Output rise and fall characteristics with REMOTE ON/OFF CONTROL

Conditions Vin : 24 VDC
Io : 100 %
Ta : 25 ºC

Vo=12V

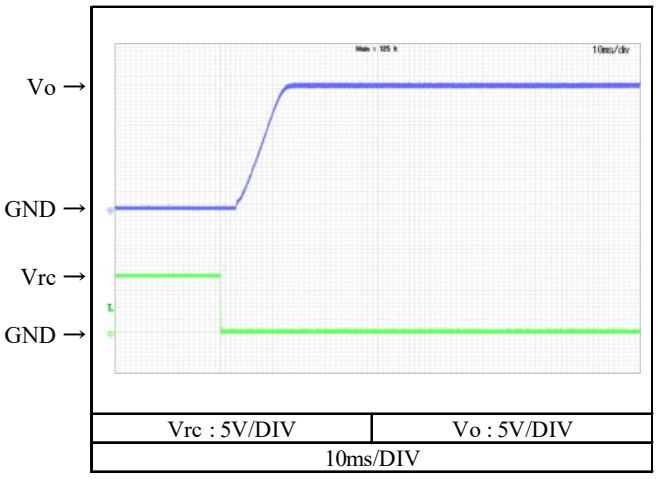


Vrc : 5V/DIV	Vo : 5V/DIV
10ms/DIV	

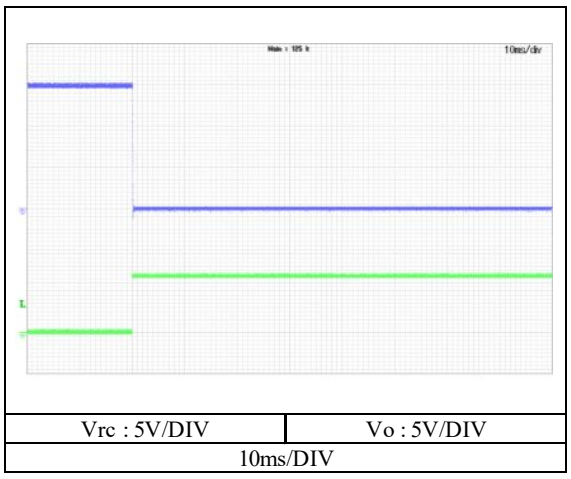


Vrc : 5V/DIV	Vo : 5V/DIV
10ms/DIV	

Vo=15V



Vrc : 5V/DIV	Vo : 5V/DIV
10ms/DIV	

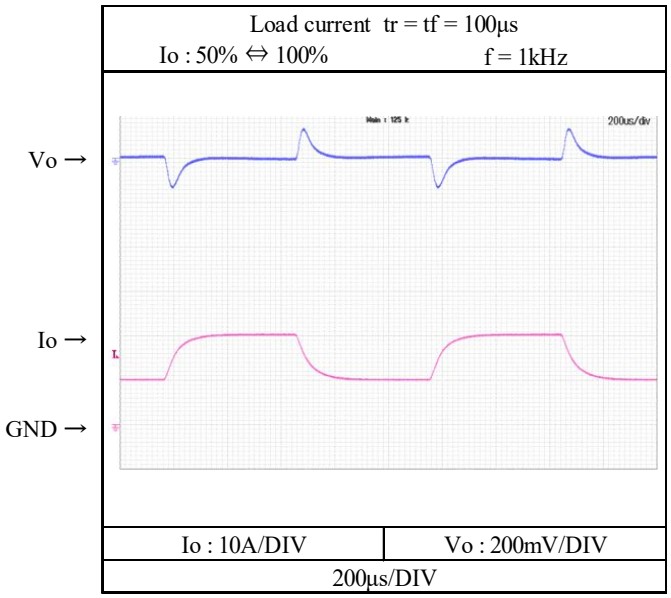


Vrc : 5V/DIV	Vo : 5V/DIV
10ms/DIV	

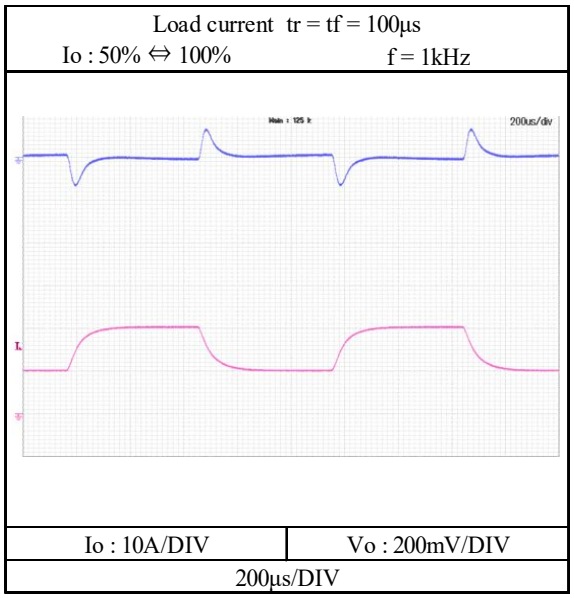
2-6. 過渡応答(負荷急変)特性 Dynamic load response characteristics

Conditions Vin : 24 VDC
Ta : 25 ºC

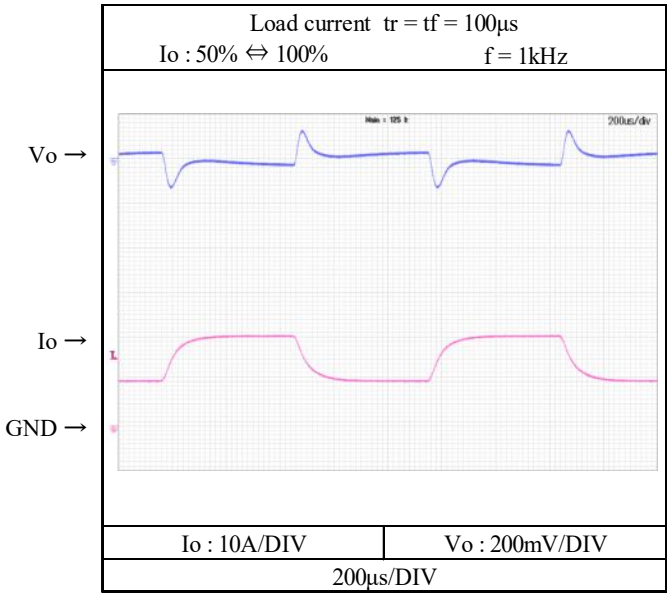
Vo=3.3V



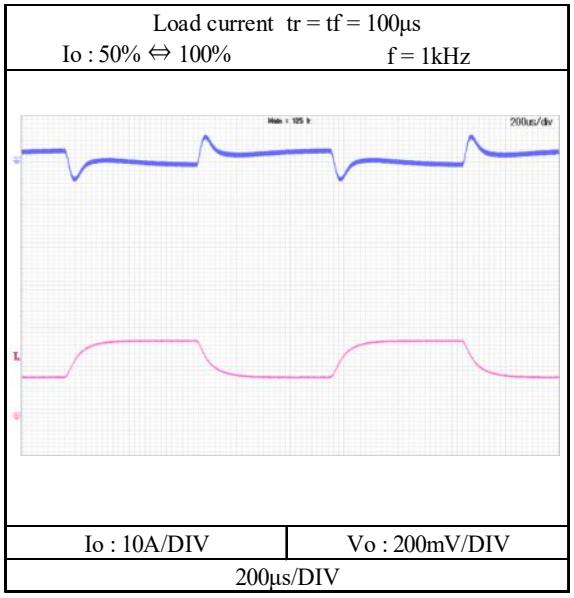
Vo=5V



Vo=12V



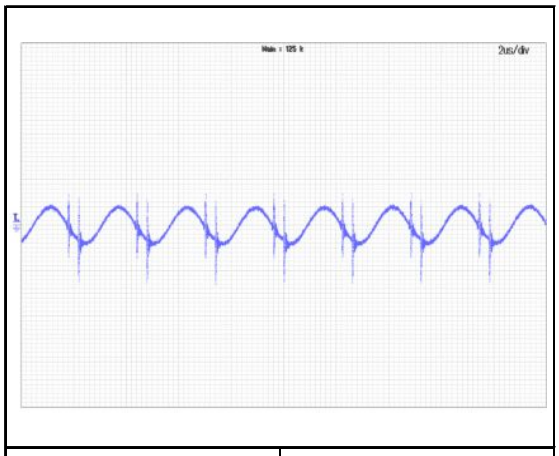
Vo=15V



2-7. 出力リップル、ノイズ波形 Output ripple and noise waveform

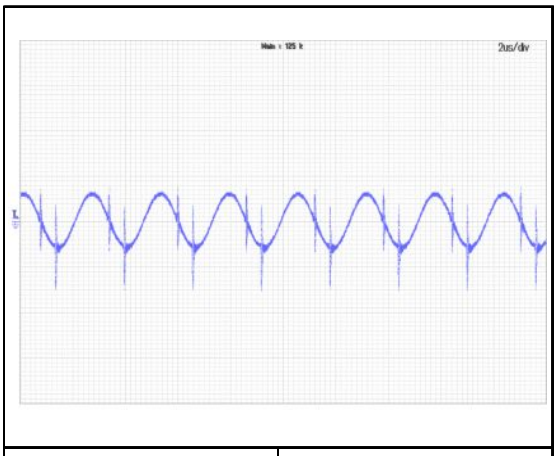
Conditions Vin : 24 VDC
Io : 100 %
Ta : 25 ºC

Vo=3.3V



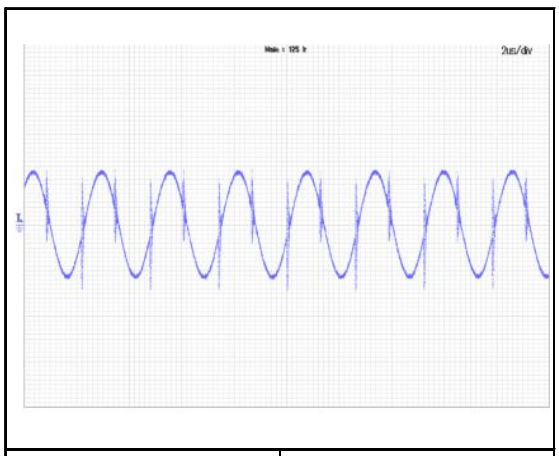
50mV/DIV	2µs/DIV

Vo=5V



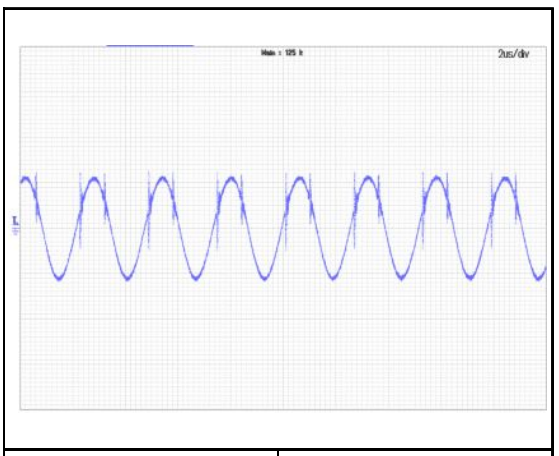
50mV/DIV	2µs/DIV

Vo=12V



50mV/DIV	2µs/DIV

Vo=15V



50mV/DIV	2µs/DIV