CCGS30-48-xxD

EVALUATION DATA

型式データ

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使用記号 Terminology used

		定義 Definition	
Vin	・・・・・	入力電圧	Input voltage
+Vo, -Vo	・・・・・	出力電圧	Output voltage
COM	・・・・・	出力共通GND	Output common GND
V_{RC}	・・・・・	RC電圧	RC voltage
Iin	・・・・・	入力電流	Input current
+Io, -Io	・・・・・	出力電流	Output current
Ta	・・・・・	周囲温度	Ambient temperature
f	・・・・・	周波数	Frequency

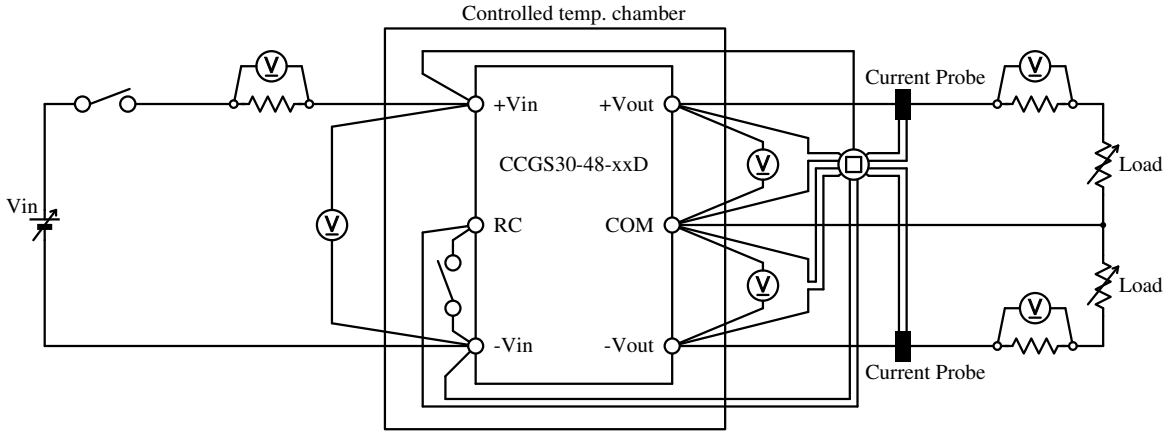
※ 当社測定条件における結果であり、参考値としてお考え願います。
Test results are reference data based on our measurement condition.

1. 測定方法 Evaluation Method

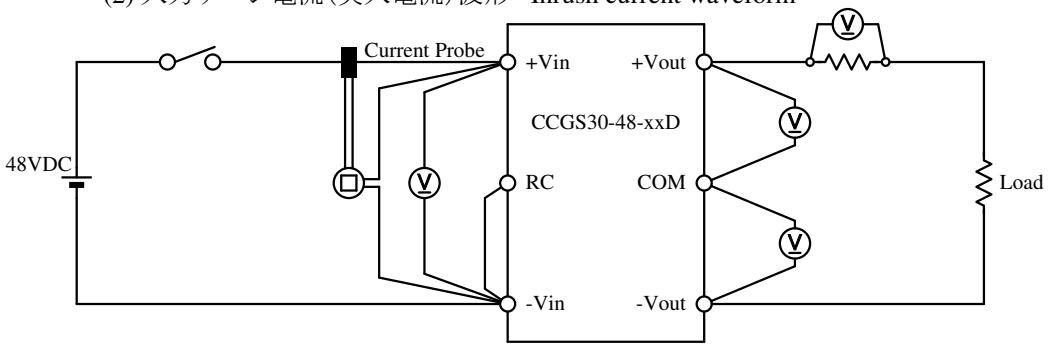
1-1. 測定回路 Measurement Circuits

(1) 静特性 、待機電力特性、通電ドリフト特性、その他特性

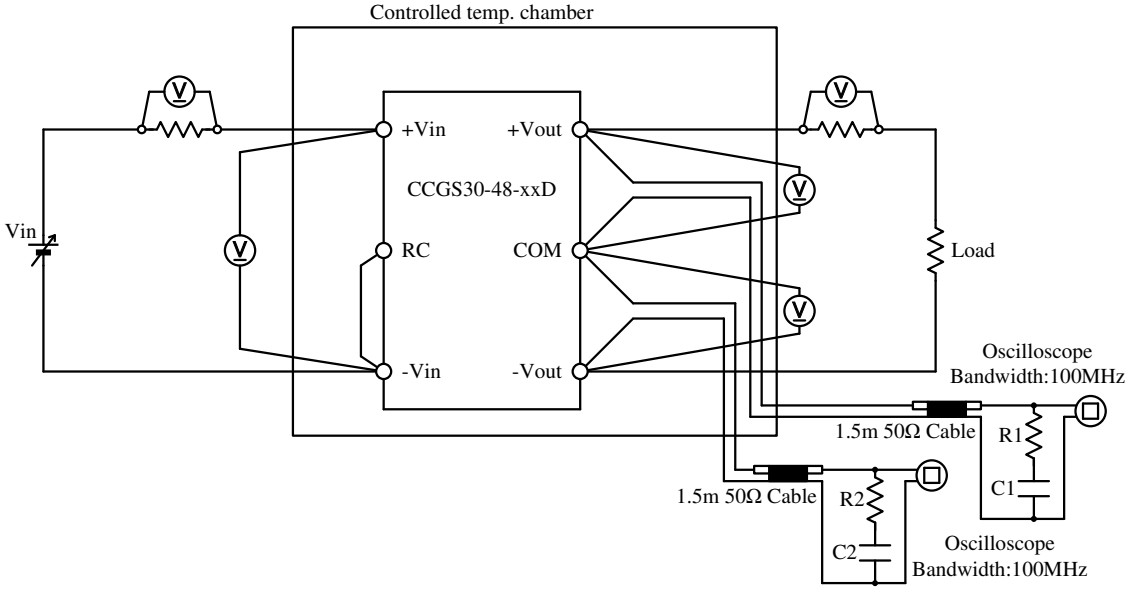
Steady state, Standby power, Warm up voltage drift and Other characteristics



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



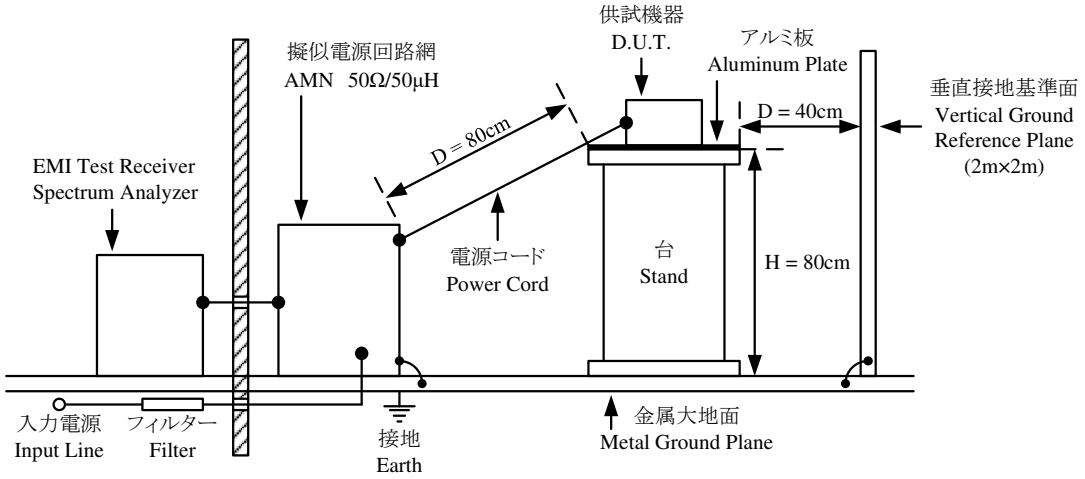
(3) 出力リップルノイズ電圧、波形 Output ripple and noise voltage and waveform



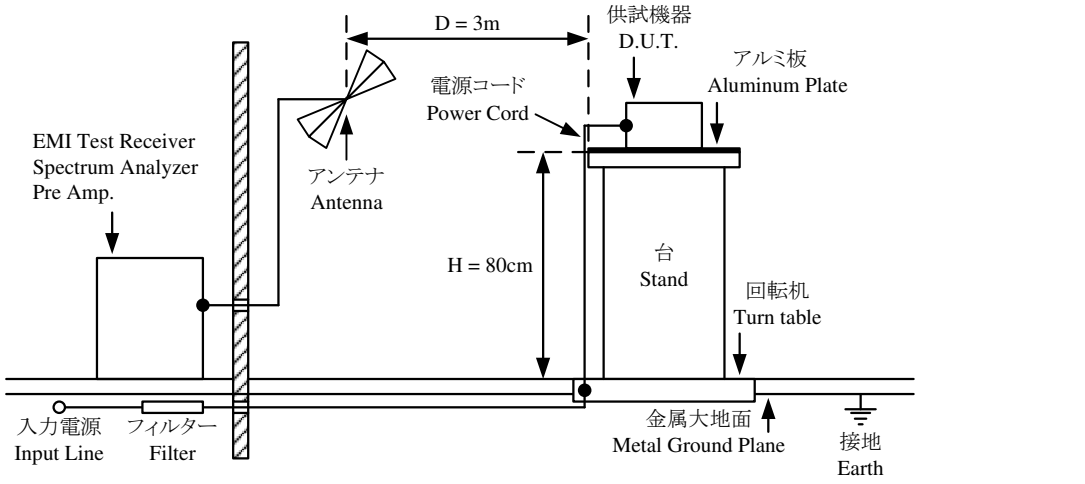
C1, C2 : 4700pF Ceramic Capacitor
R1, R2 : 50Ω

(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

±12V 1. Regulation - line and load Condition Ta : 25 °C

・+Vo to COM

Io \ Vin	18VDC	24VDC	48VDC	76VDC	Line regulation	
0%	12.063V	12.064V	12.064V	12.066V	2.9mV	0.024%
50%(0.625A)	12.074V	12.076V	12.075V	12.074V	1.9mV	0.016%
100%(1.25A)	12.073V	12.077V	12.078V	12.077V	4.7mV	0.039%
Load regulation	11.2mV	12.9mV	14.0mV	11.3mV		
	0.093%	0.107%	0.117%	0.094%		

・−Vo to COM

Io \ Vin	18VDC	24VDC	48VDC	76VDC	Line regulation	
0%	-12.080V	-12.086V	-12.086V	-12.084V	5.3mV	0.044%
50%(0.625A)	-12.064V	-12.066V	-12.066V	-12.066V	2.4mV	0.020%
100%(1.25A)	-12.064V	-12.063V	-12.063V	-12.062V	1.5mV	0.013%
Load regulation	16.7mV	22.4mV	22.6mV	21.0mV		
	0.139%	0.187%	0.188%	0.175%		

・+Vo to −Vo

Io \ Vin	18VDC	24VDC	48VDC	76VDC	Line regulation	
0%	24.143V	24.149V	24.150V	24.149V	6.4mV	0.027%
50%(0.625A)	24.138V	24.142V	24.141V	24.141V	4.0mV	0.017%
100%(1.25A)	24.138V	24.140V	24.141V	24.140V	3.8mV	0.016%
Load regulation	5.9mV	9.5mV	8.5mV	9.9mV		
	0.025%	0.040%	0.035%	0.041%		

2. Temperature drift Conditions Vin : 48 VDC
Io : 100 %

Ta	-20°C	25°C	70°C	Temperature stability	
+Vo to COM	12.054V	12.078V	12.104V	49.6mV	0.413%
-Vo to COM	-12.040V	-12.063V	-12.086V	45.9mV	0.382%
+Vo to -Vo	24.094V	24.141V	24.190V	95.5mV	0.398%

3. Load Regulation - Unbalance load Conditions Ta : 25 °C
-Io : 100 %

・+Vo to COM

+Io \ Vin	18VDC	24VDC	48VDC	76VDC
20%(0.25A)	11.886V	11.887V	11.885V	11.885V
100%(1.25A)	12.076V	12.078V	12.080V	12.078V
Load regulation	189.1mV	191.0mV	194.6mV	193.0mV
	1.576%	1.592%	1.622%	1.608%

Conditions Ta : 25 °C
+Io : 100 %

・−Vo to COM

-Io \ Vin	18VDC	24VDC	48VDC	76VDC
20%(0.25A)	11.893V	11.895V	11.896V	11.895V
100%(1.25A)	12.060V	12.061V	12.061V	12.061V
Load regulation	167.4mV	165.9mV	165.2mV	166.1mV
	1.395%	1.383%	1.377%	1.384%

±15V 1. Regulation - line and load Condition Ta : 25 °C

・+Vo to COM

Io \ Vin	18VDC	24VDC	48VDC	76VDC	Line regulation	
0%	15.130V	15.128V	15.126V	15.124V	5.2mV	0.035%
50%(0.5A)	15.129V	15.128V	15.126V	15.125V	4.0mV	0.027%
100%(1A)	15.128V	15.129V	15.130V	15.128V	2.0mV	0.013%
Load regulation	1.5mV	1.7mV	4.4mV	3.8mV		
	0.010%	0.011%	0.029%	0.025%		

・−Vo to COM

Io \ Vin	18VDC	24VDC	48VDC	76VDC	Line regulation	
0%	-15.132V	-15.130V	-15.128V	-15.128V	4.6mV	0.031%
50%(0.5A)	-15.124V	-15.122V	-15.120V	-15.119V	4.6mV	0.031%
100%(1A)	-15.122V	-15.120V	-15.119V	-15.117V	5.4mV	0.036%
Load regulation	9.9mV	10.3mV	9.4mV	10.7mV		
	0.066%	0.069%	0.063%	0.071%		

・+Vo to −Vo

Io \ Vin	18VDC	24VDC	48VDC	76VDC	Line regulation	
0%	30.262V	30.257V	30.254V	30.252V	9.9mV	0.033%
50%(0.5A)	30.252V	30.251V	30.246V	30.244V	8.6mV	0.029%
100%(1A)	30.250V	30.249V	30.249V	30.245V	5.3mV	0.018%
Load regulation	11.4mV	8.5mV	7.5mV	8.2mV		
	0.038%	0.028%	0.025%	0.027%		

2. Temperature drift Conditions Vin : 48 VDC
Io : 100 %

Ta	-20°C	25°C	70°C	Temperature stability	
+Vo to COM	15.093V	15.130V	15.165V	72.1mV	0.481%
-Vo to COM	-15.082V	-15.119V	-15.152V	70.0mV	0.467%
+Vo to -Vo	30.175V	30.249V	30.317V	142.1mV	0.474%

3. Load Regulation - Unbalance load Conditions Ta : 25 °C
-Io : 100 %

・+Vo to COM

+Io \ Vin	18VDC	24VDC	48VDC	76VDC
20%(0.2A)	14.962V	14.968V	14.968V	14.967V
100%(1A)	15.122V	15.127V	15.130V	15.129V
Load regulation	159.6mV	159.1mV	161.6mV	161.7mV
	1.064%	1.061%	1.077%	1.078%

Conditions Ta : 25 °C
+Io : 100 %

・−Vo to COM

-Io \ Vin	18VDC	24VDC	48VDC	76VDC
20%(0.2A)	14.967V	14.971V	14.973V	14.972V
100%(1A)	15.113V	15.114V	15.116V	15.116V
Load regulation	146.2mV	142.9mV	143.1mV	143.7mV
	0.975%	0.953%	0.954%	0.958%

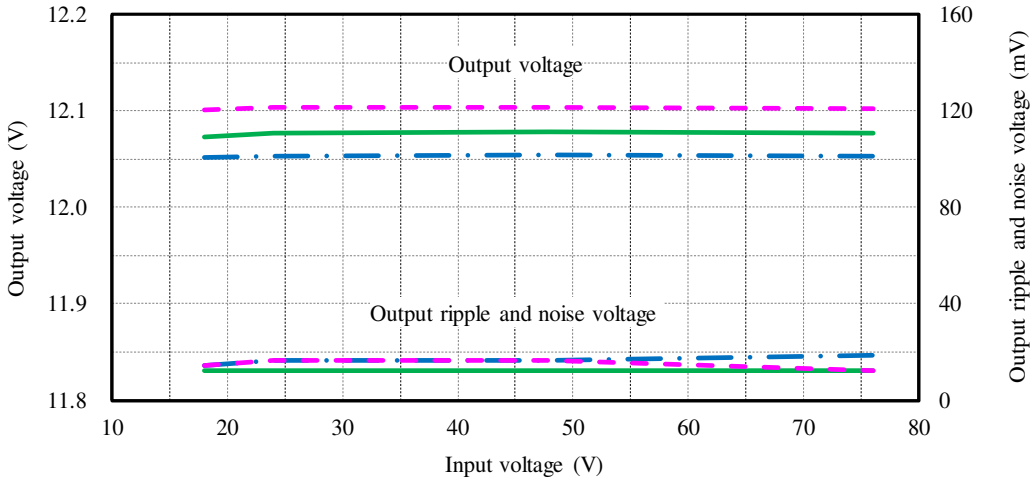
(2) 出力電圧・出力リップルノイズ電圧 対 入力電圧

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

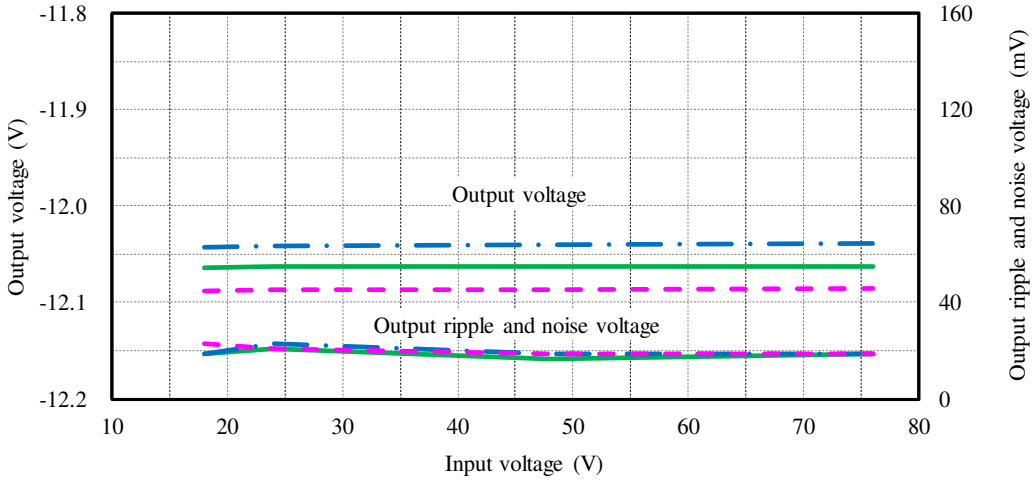
Conditions Io : 100 %
Ta : -20 ℃
: 25 ℃
: 70 ℃

±12V

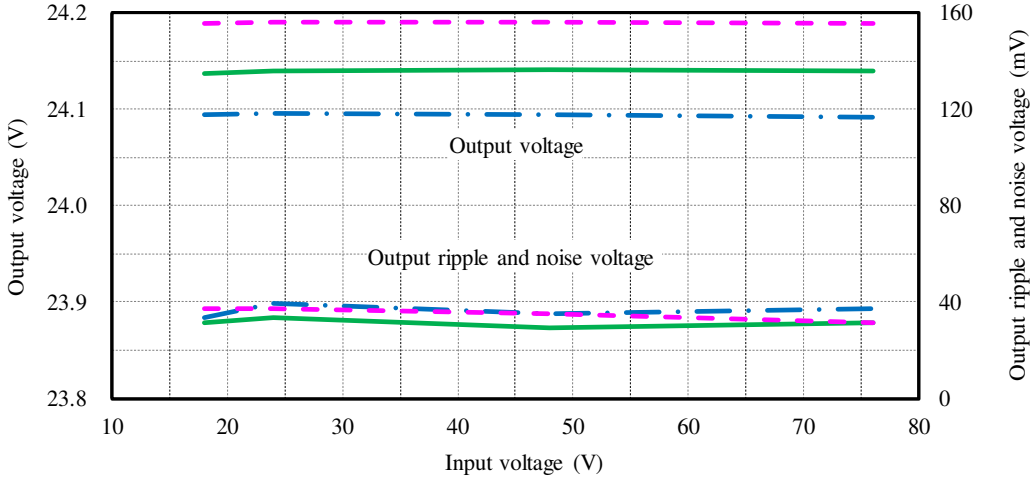
・+Vo to COM



・−Vo to COM



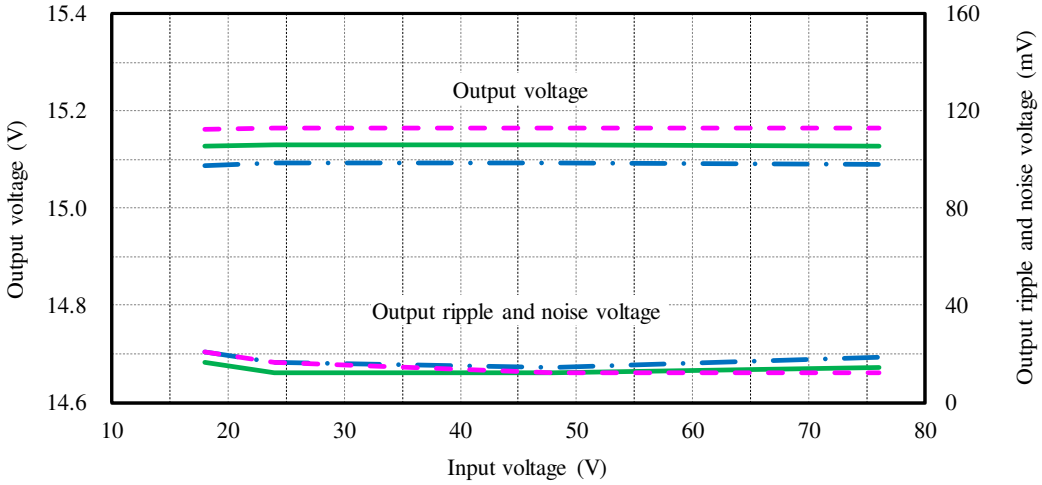
・+Vo to -Vo



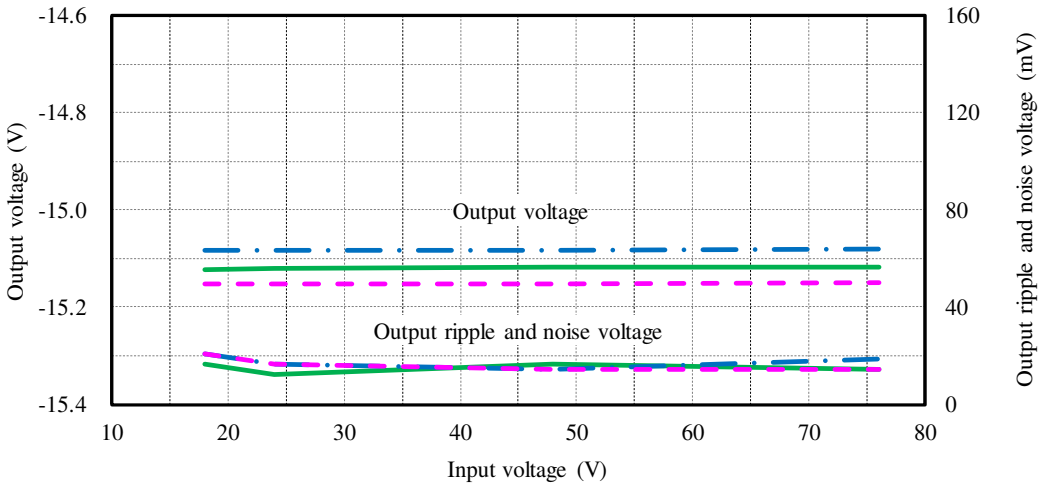
Conditions Io : 100 %
Ta : -20 ℃
: 25 ℃
: 70 ℃

±15V

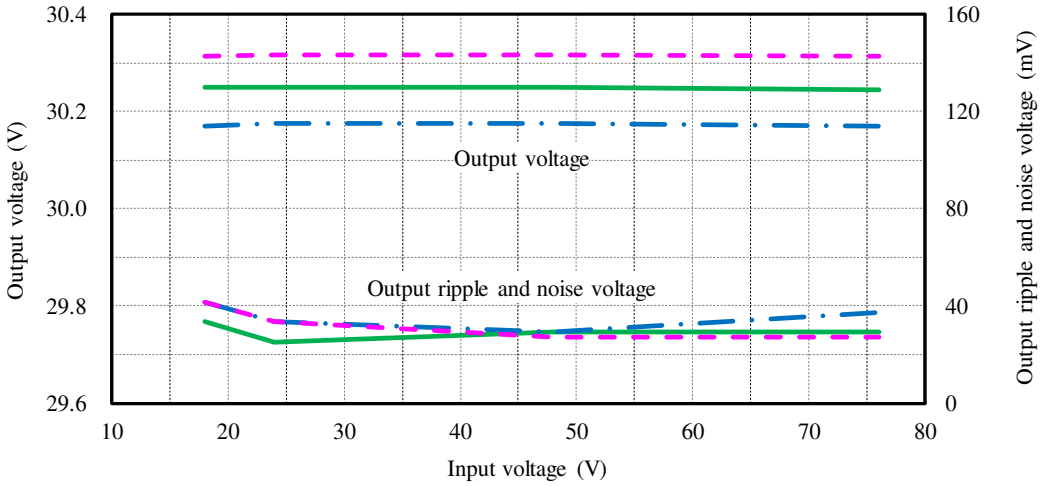
・+Vo to COM



・−Vo to COM



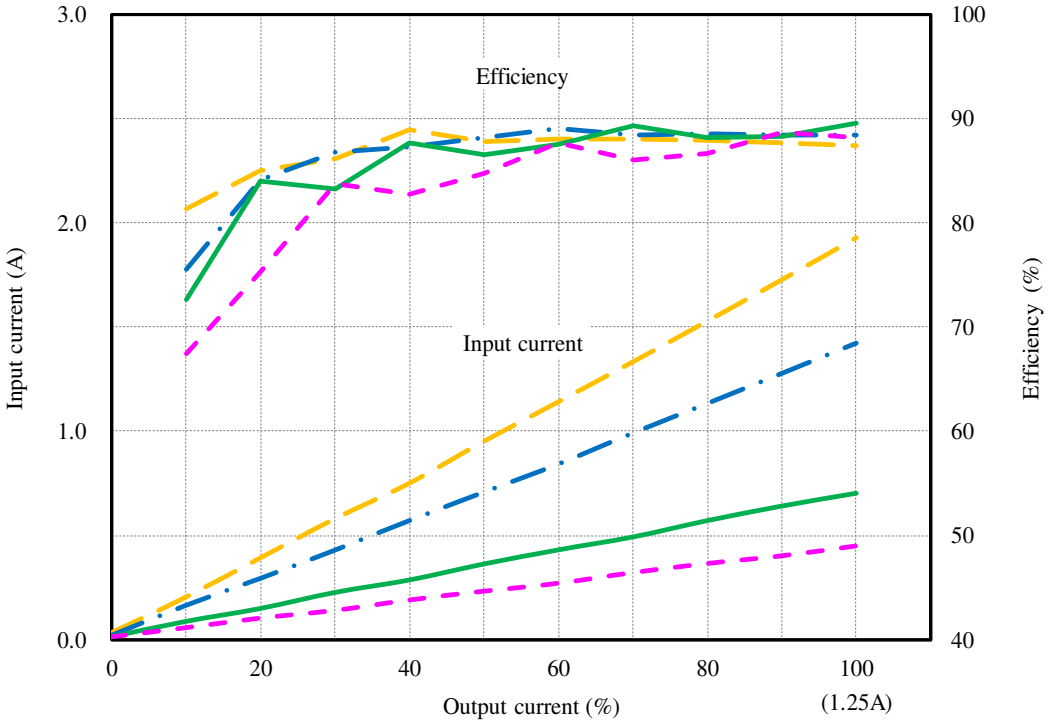
・+Vo to -Vo



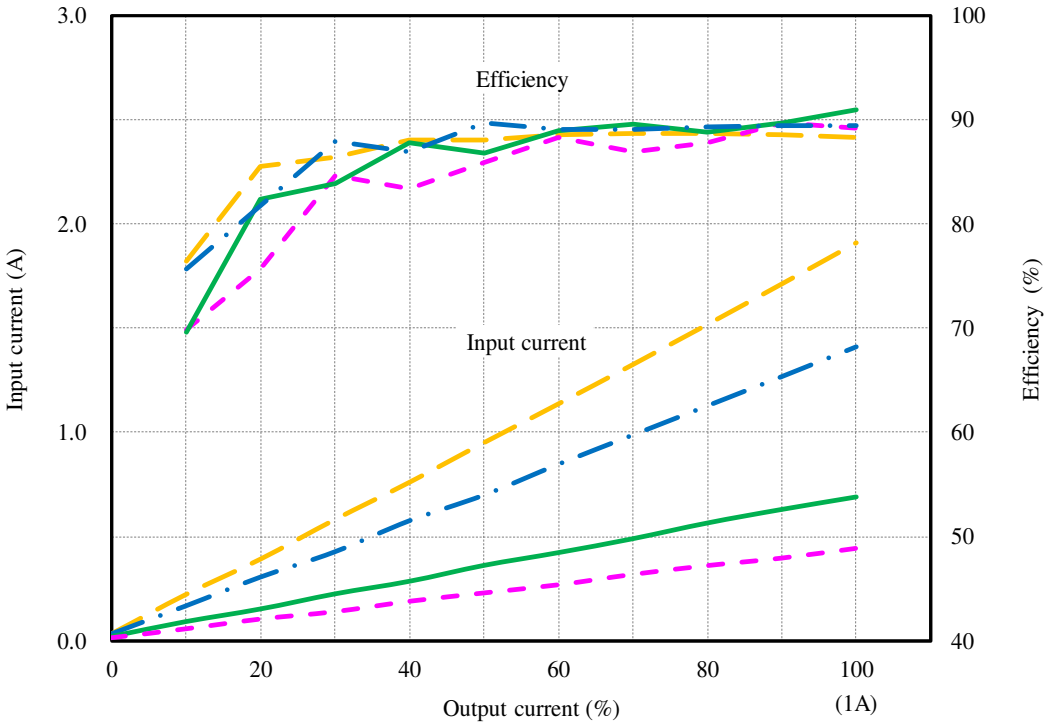
(3) 入力電流･効率 対 出力電流 Input current and Efficiency vs. Output current

Conditions Vin : 18 VDC
: 24 VDC
: 48 VDC
: 76 VDC
Ta : 25 °C

±12V



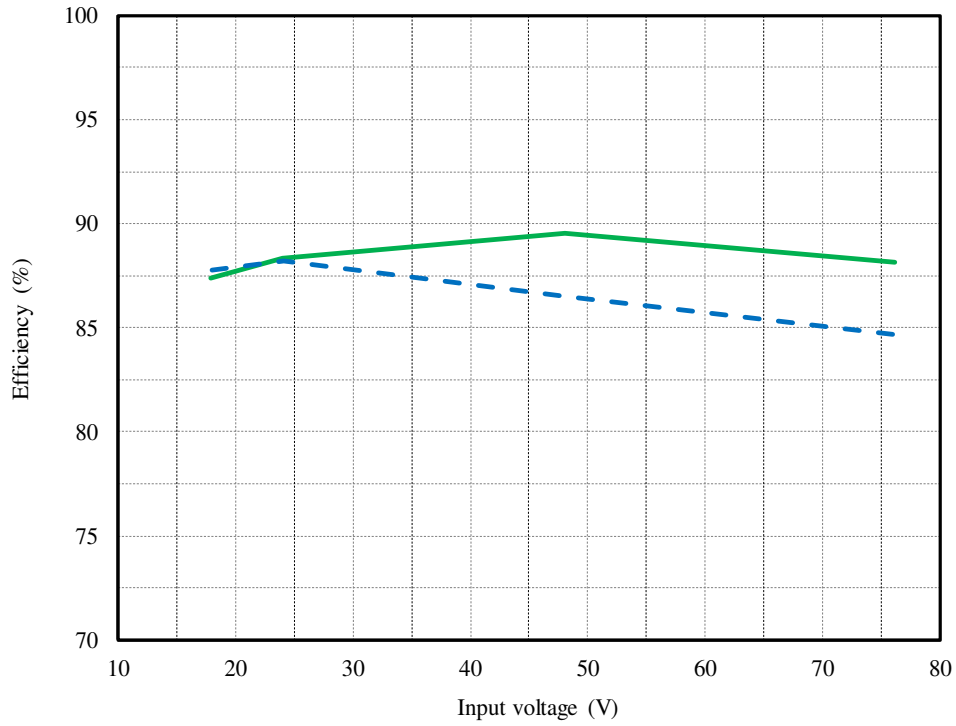
±15V



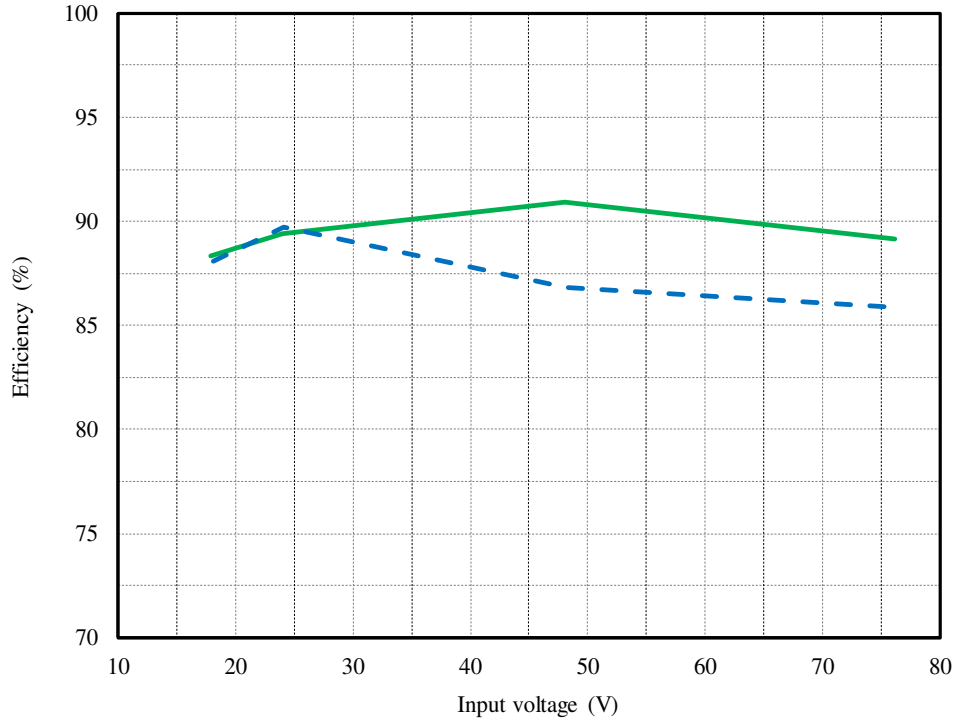
(4) 効率 対 入力電圧 Efficiency vs. Input voltage

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

±12V



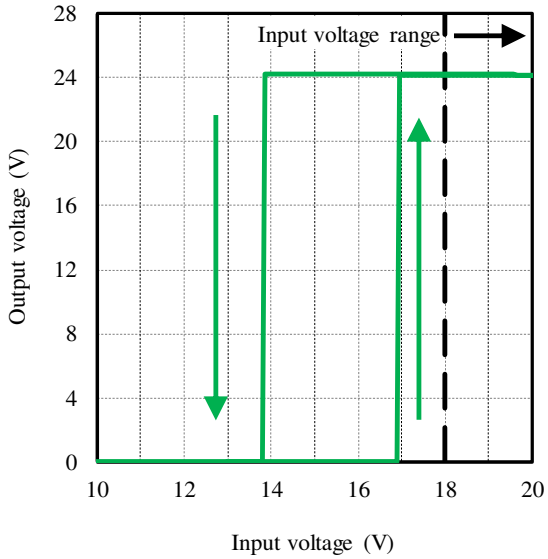
±15V



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

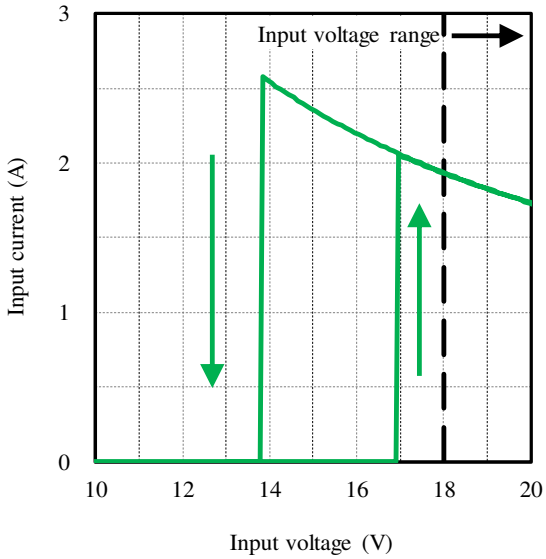
出力電圧 対 入力電圧
Output voltage vs. Input voltage

Conditions Io : 100 %
Ta : 25 ℃



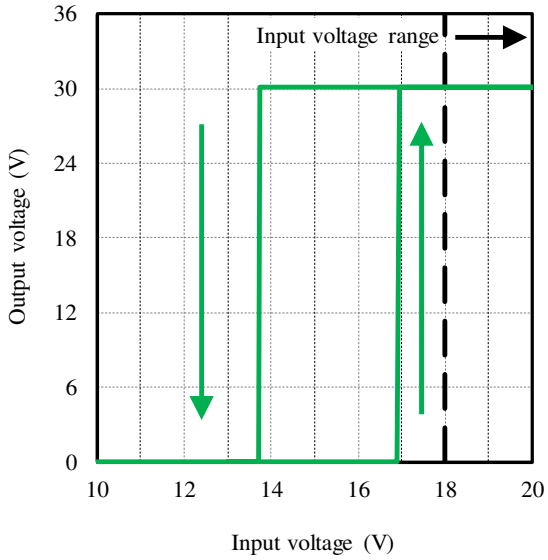
入力電流 対 入力電圧
Input current vs. Input voltage

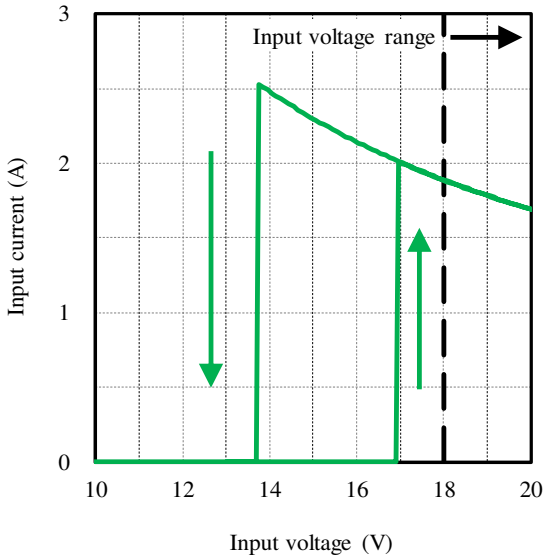
Conditions Io : 100 %
Ta : 25 ℃



±12V

±15V

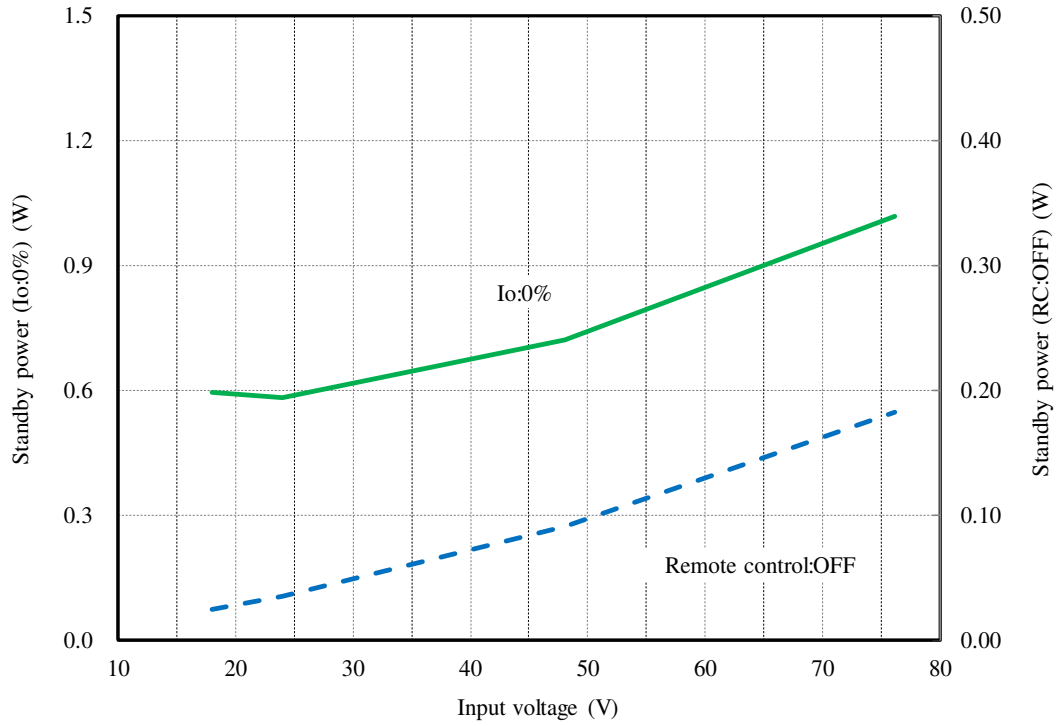




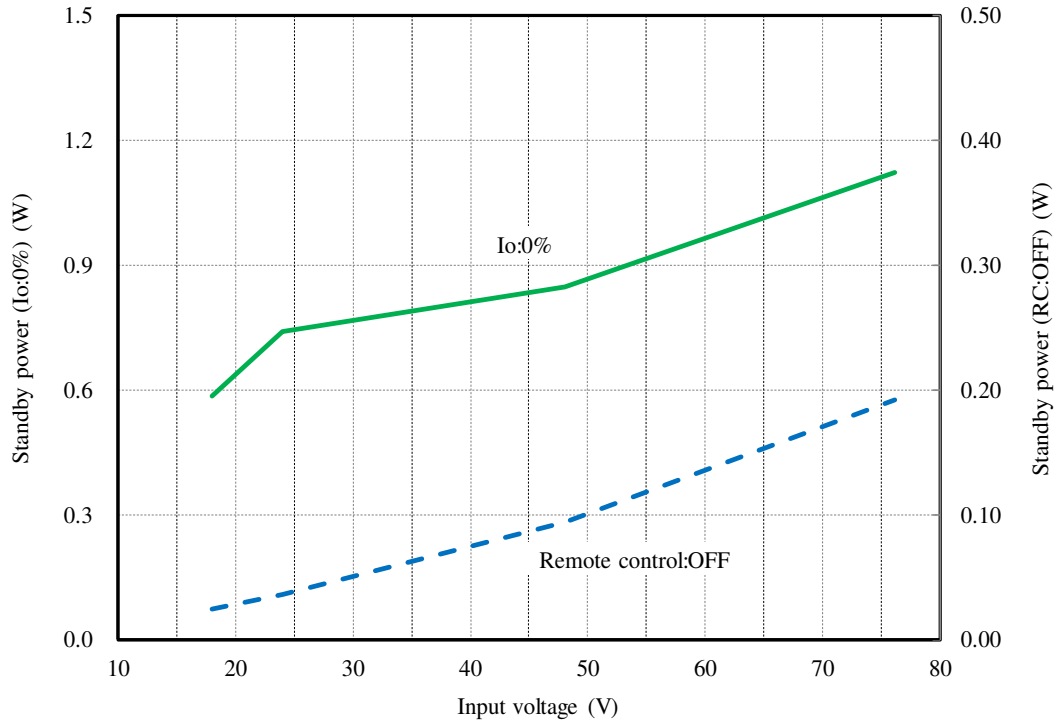
2-2. 待機電力特性 Standby power characteristics

Condition Ta : 25 °C

±12V



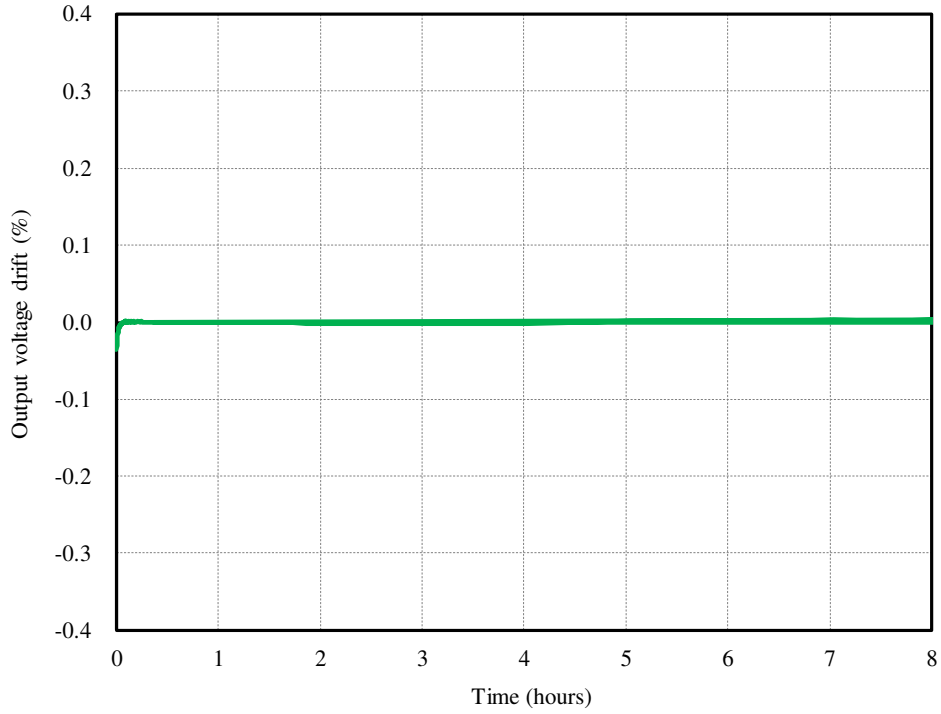
±15V



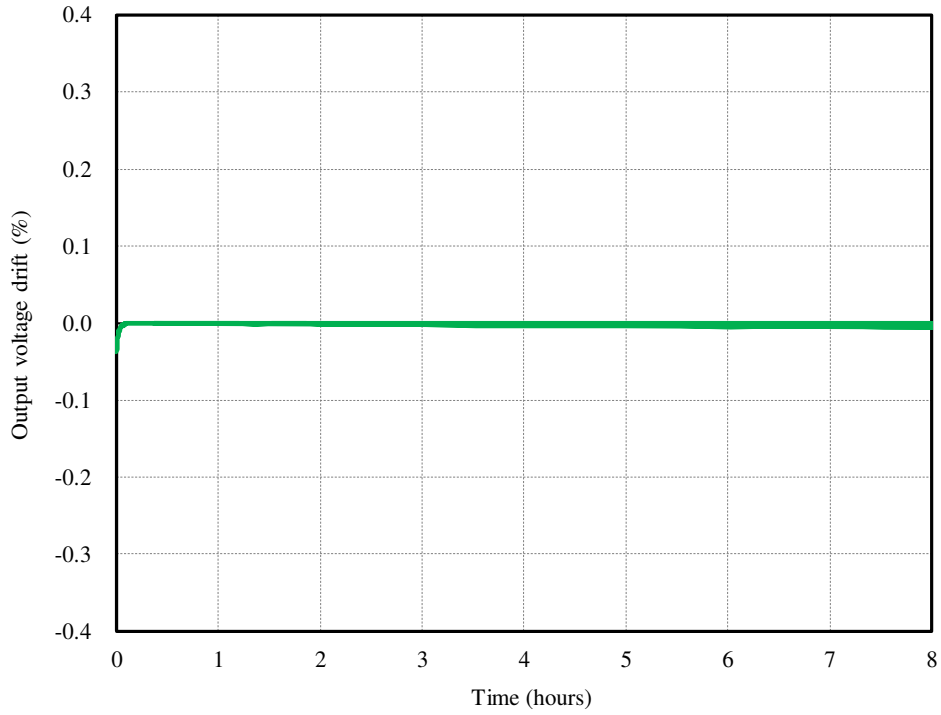
2-3. 通電ドリフト特性 Warm up voltage drift characteristics

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

±12V



±15V



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

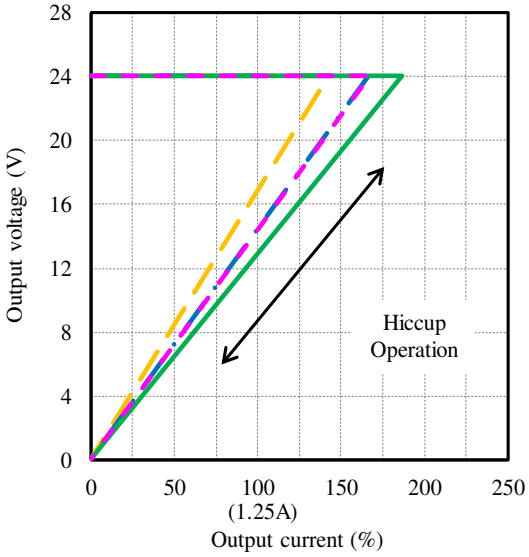
入力電圧依存性
Input voltage dependence

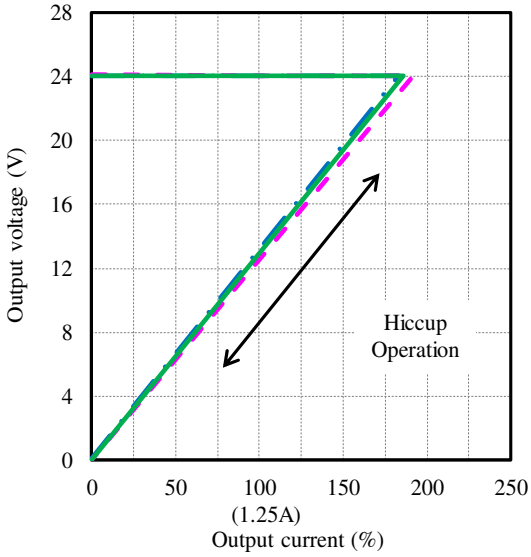
Conditions Vin : 18 VDC
: 24 VDC
: 48 VDC
: 76 VDC
Ta : 25 °C

周囲温度依存性
Ambient temperature dependence

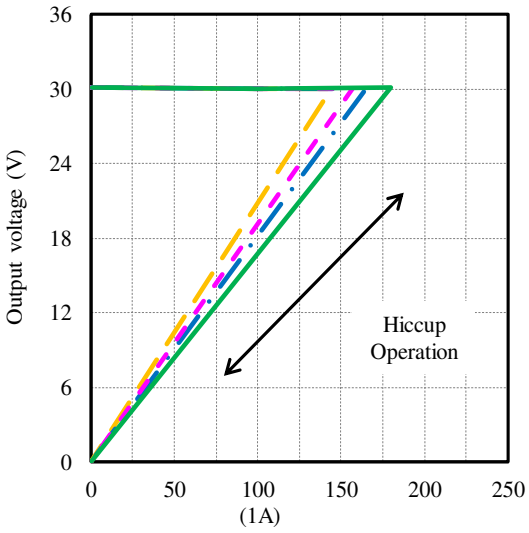
Conditions Vin : 48 VDC
Ta : -20 °C
: 25 °C
: 70 °C

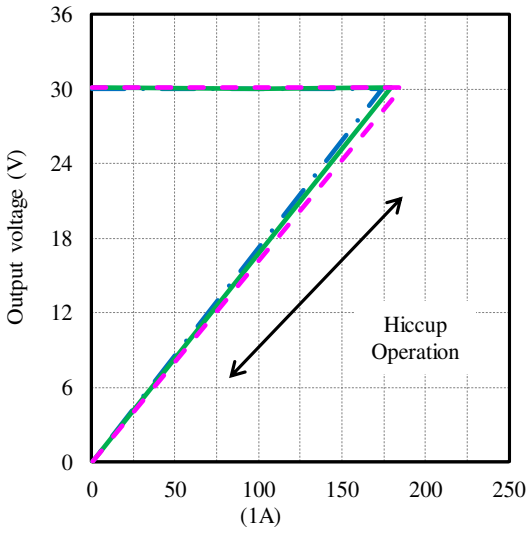
±12V





±15V

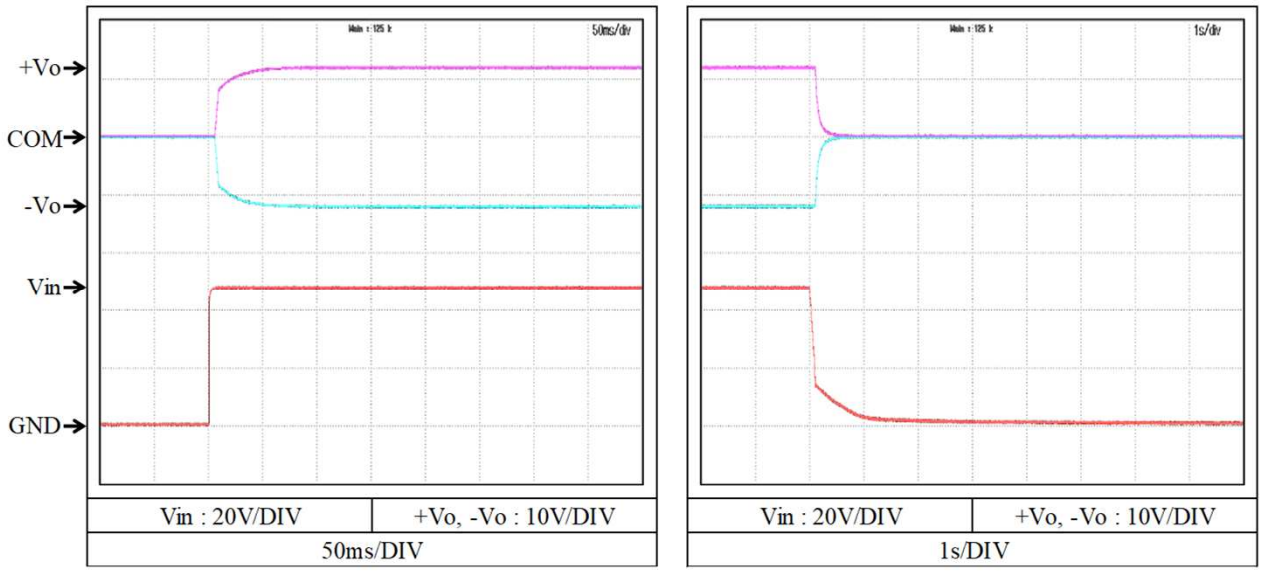




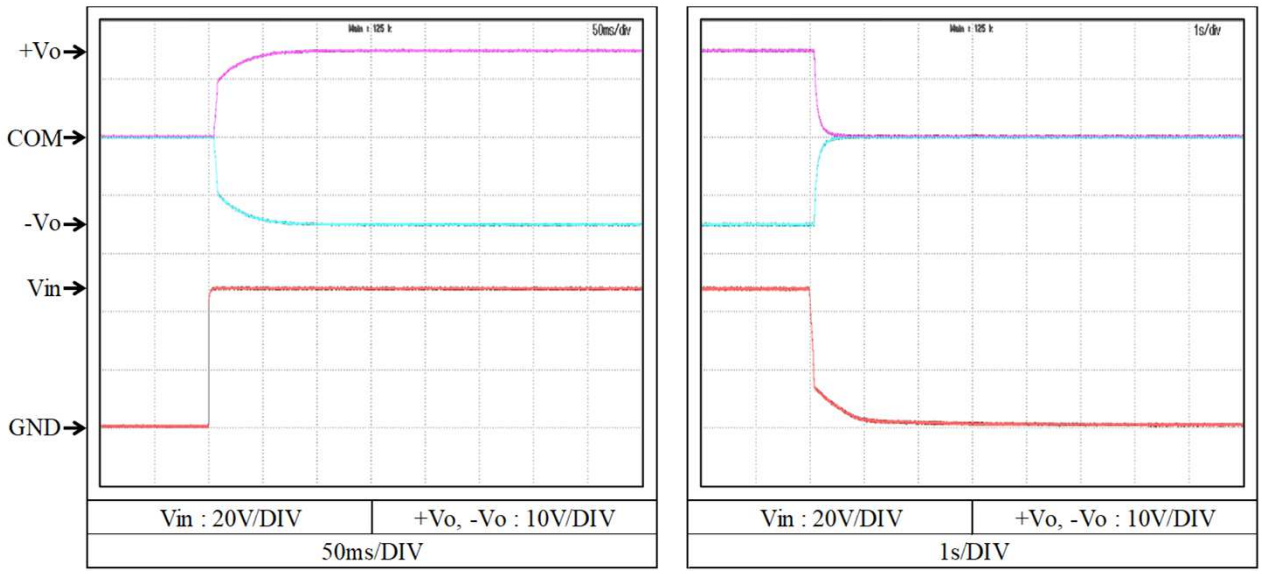
2-5. 出力立ち上がり・立ち下がり特性 Output rise and fall characteristics

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

±12V



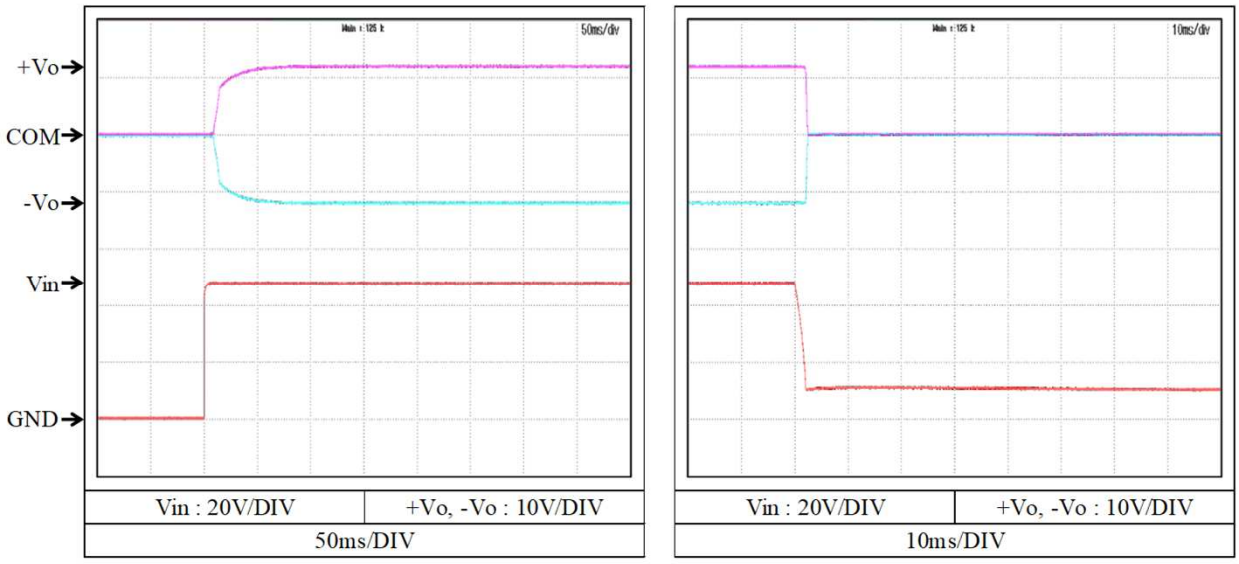
±15V



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

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

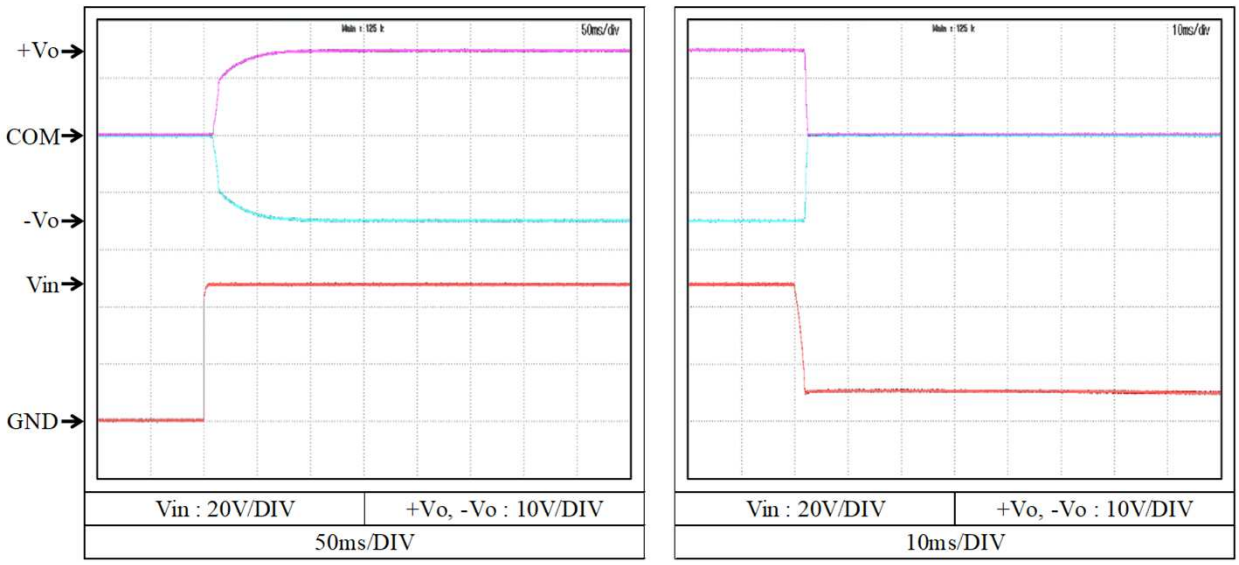
±12V



Vin : 20V/DIV	+Vo, -Vo : 10V/DIV
50ms/DIV	

Vin : 20V/DIV	+Vo, -Vo : 10V/DIV
10ms/DIV	

±15V



Vin : 20V/DIV	+Vo, -Vo : 10V/DIV
50ms/DIV	

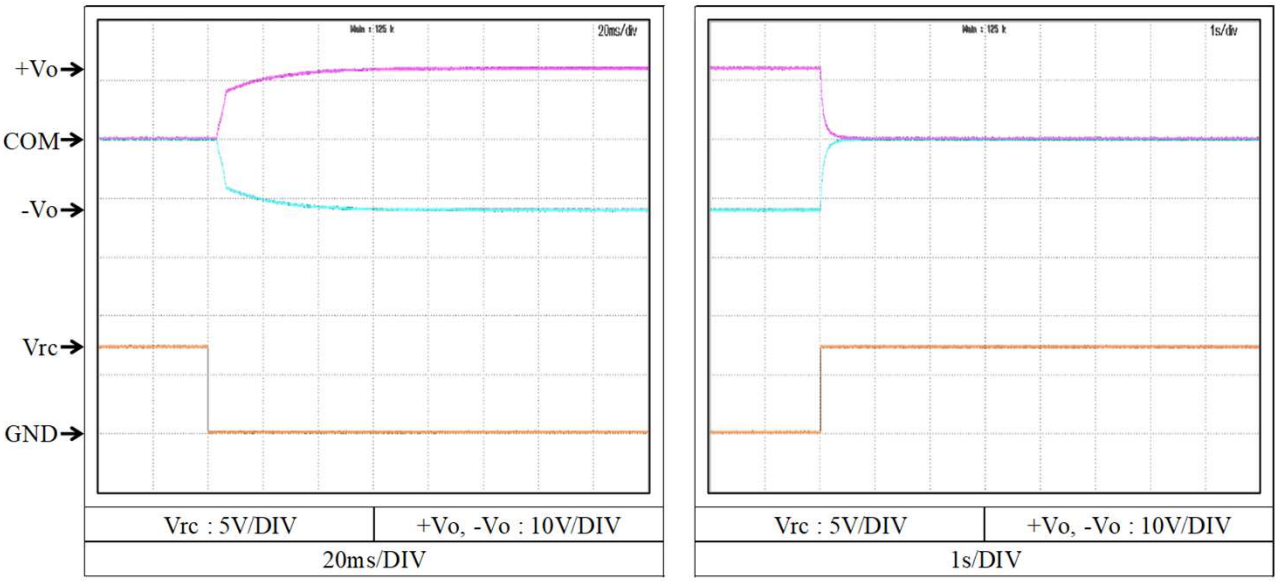
Vin : 20V/DIV	+Vo, -Vo : 10V/DIV
10ms/DIV	

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 : 48 VDC
Io : 0 %
Ta : 25 °C

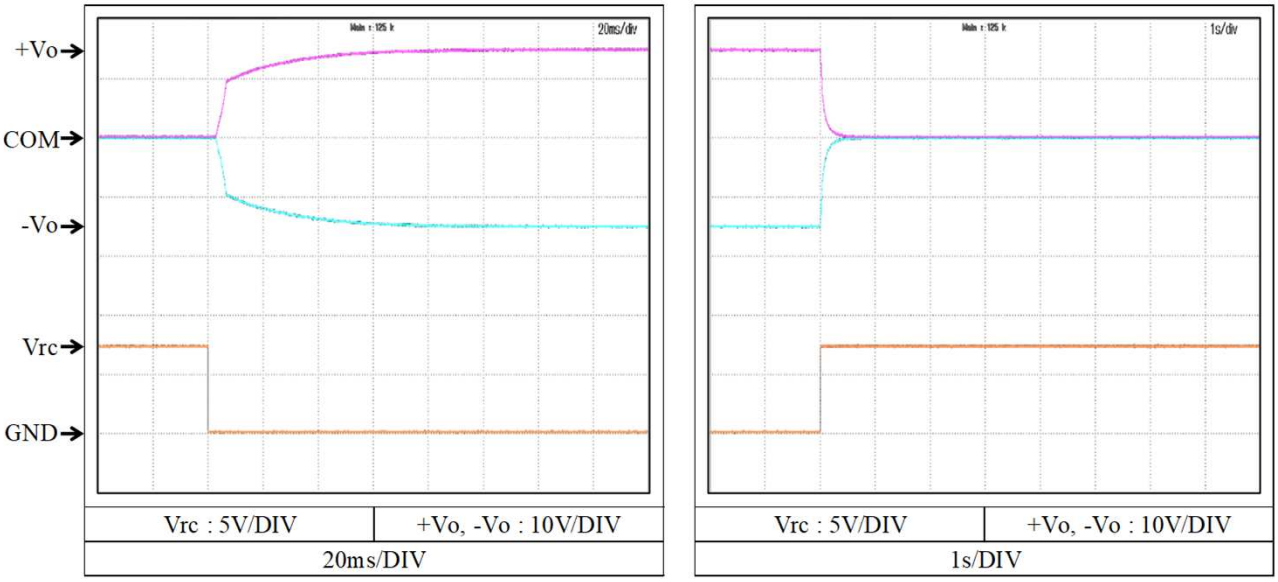
±12V



Vrc : 5V/DIV	+Vo, -Vo : 10V/DIV
20ms/DIV	

Vrc : 5V/DIV	+Vo, -Vo : 10V/DIV
1s/DIV	

±15V



Vrc : 5V/DIV	+Vo, -Vo : 10V/DIV
20ms/DIV	

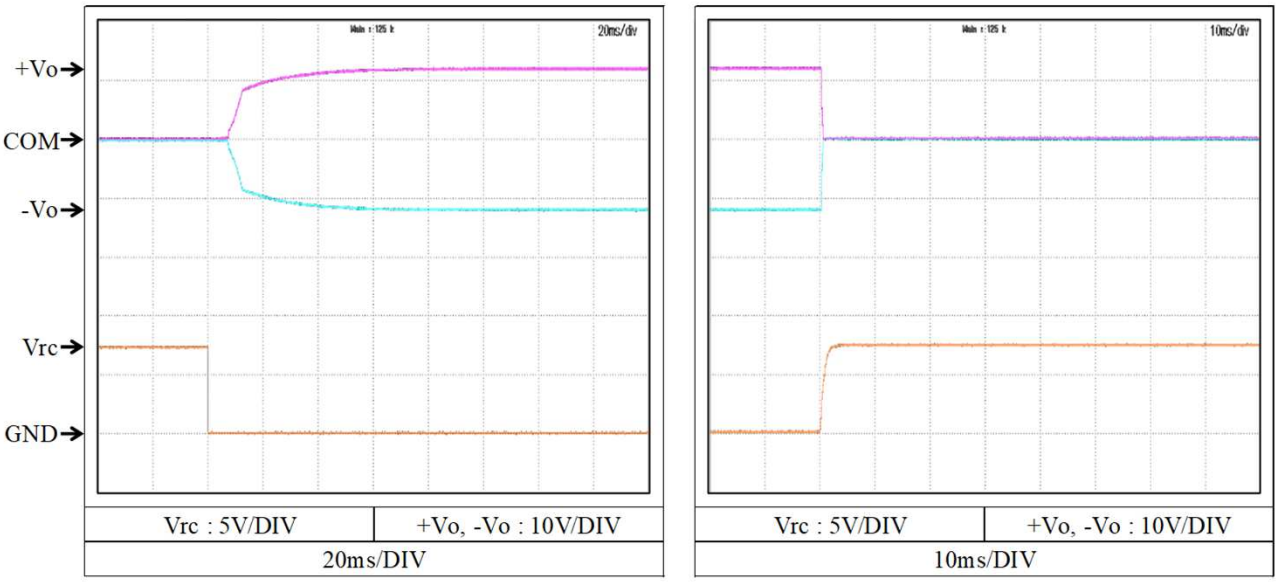
Vrc : 5V/DIV	+Vo, -Vo : 10V/DIV
1s/DIV	

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 : 48 VDC
Io : 100 %
Ta : 25 °C

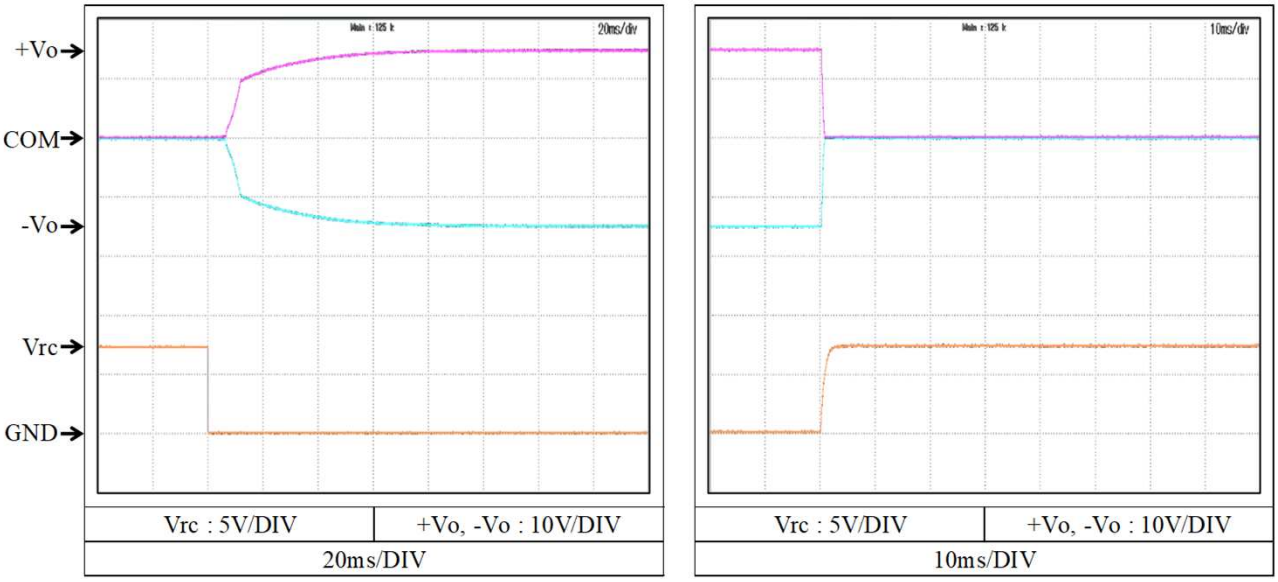
±12V



Vrc : 5V/DIV	+Vo, -Vo : 10V/DIV
20ms/DIV	

Vrc : 5V/DIV	+Vo, -Vo : 10V/DIV
10ms/DIV	

±15V



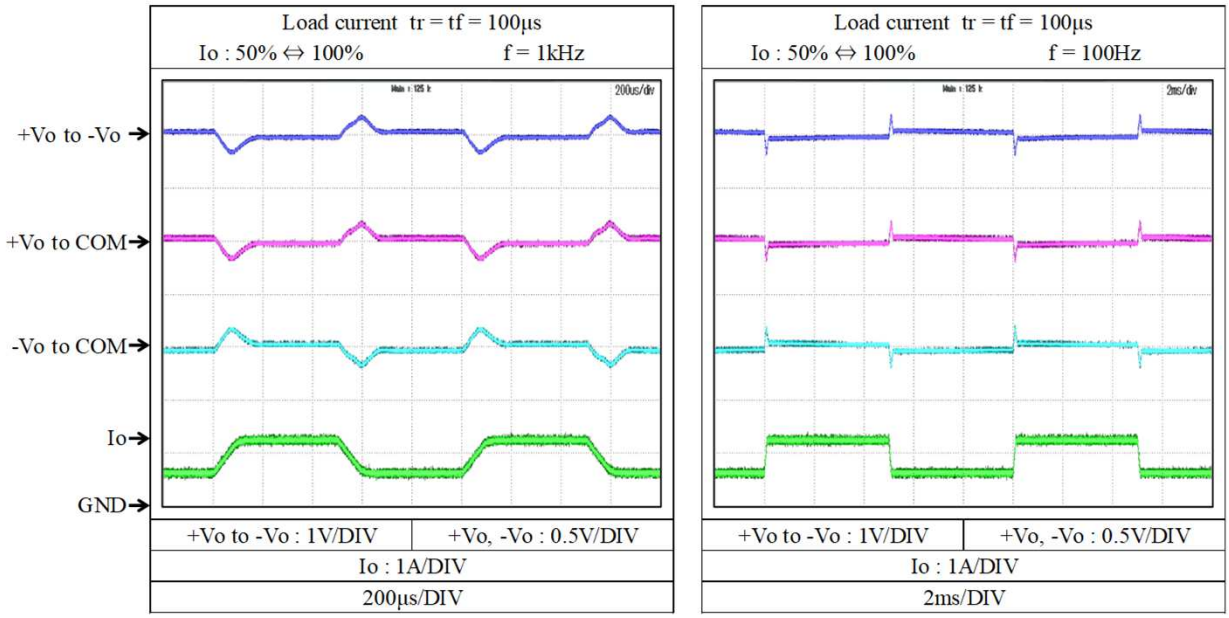
Vrc : 5V/DIV	+Vo, -Vo : 10V/DIV
20ms/DIV	

Vrc : 5V/DIV	+Vo, -Vo : 10V/DIV
10ms/DIV	

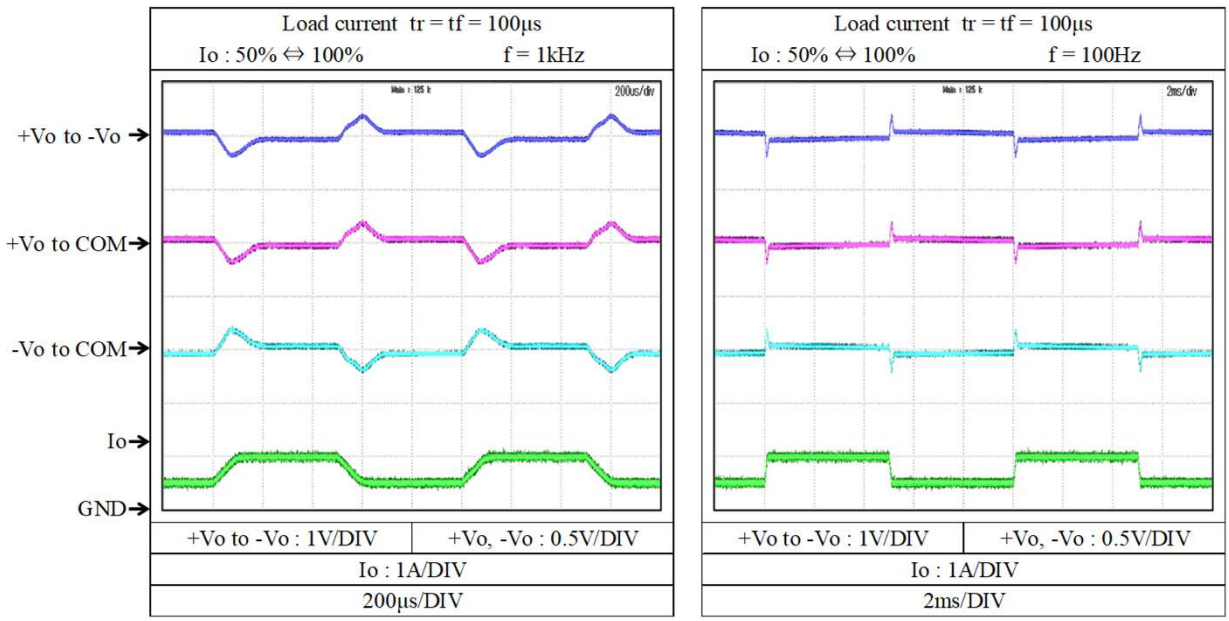
2-6. 過渡応答(負荷急変)特性 Dynamic load response characteristics

Conditions Vin : 48 VDC
Ta : 25 °C

±12V



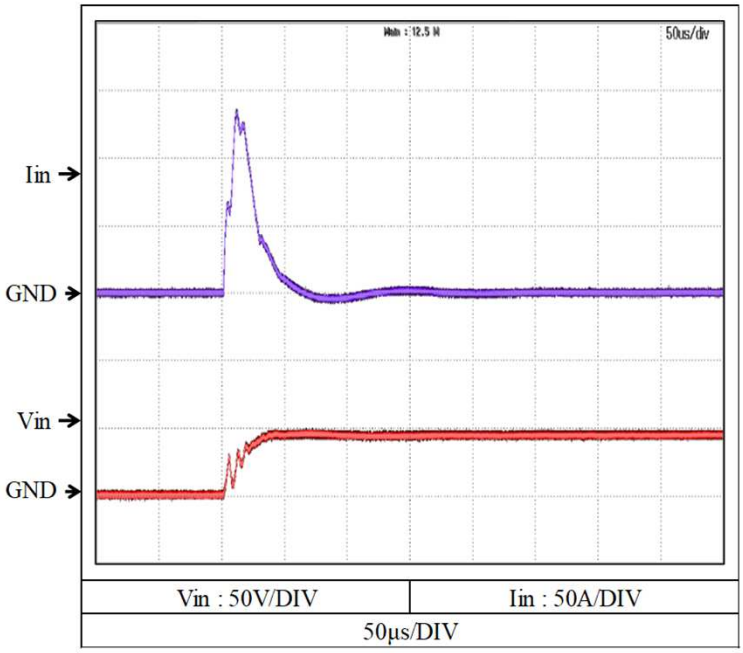
±15V



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

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

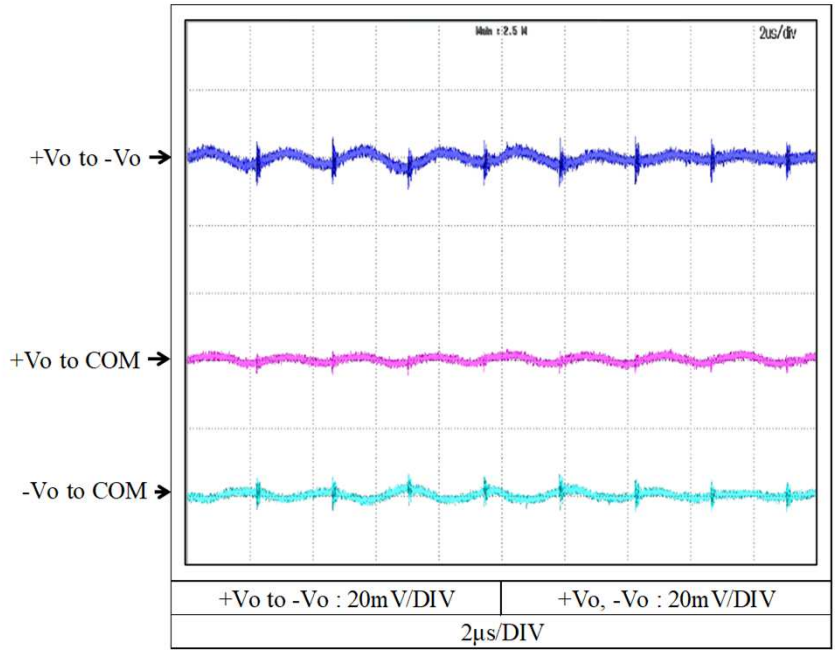
±12V



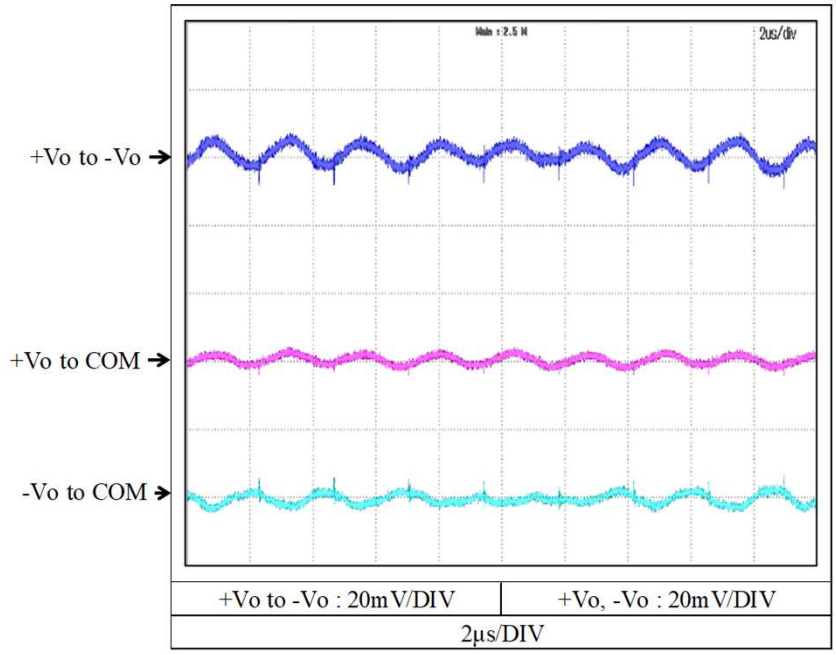
2-8. 出力リップルノイズ波形 Output ripple and noise waveform

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

±12V



±15V

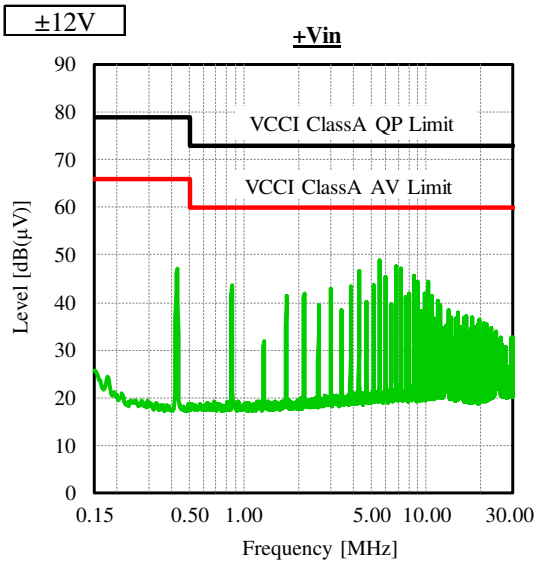


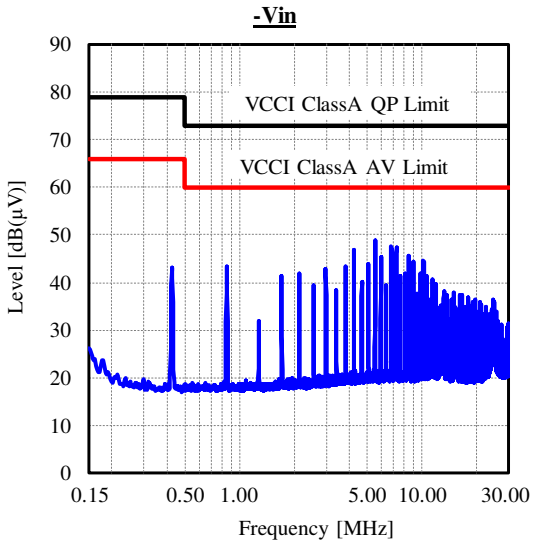
2-9. EMI特性 Electro-Magnetic Interference characteristics

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

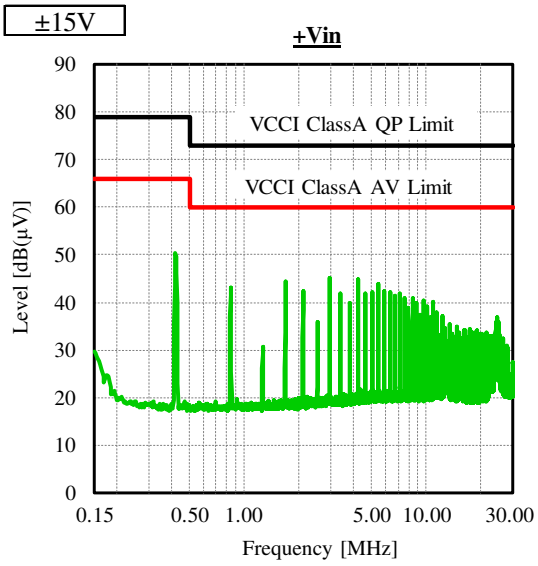
Conditions Vin : 48 VDC
Io : 100 %
Ta : 25 ℃

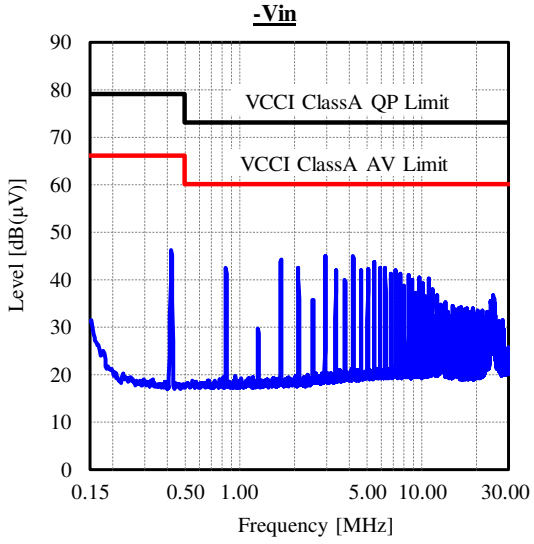
±12V





±15V





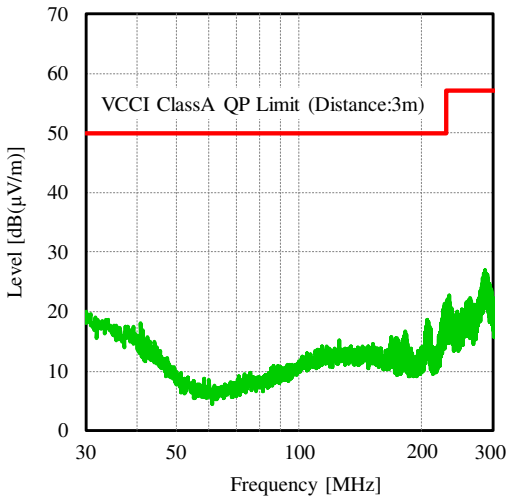
表示はQP値
Indication is QP values.

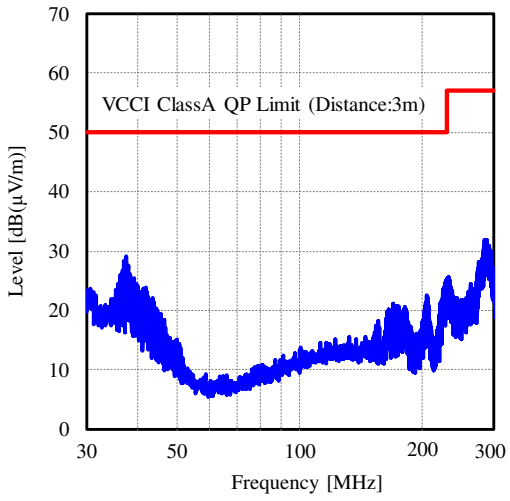
2-9. EMI特性 Electro-Magnetic Interference characteristics

(b) 雑音電界強度 (輻射ノイズ) Radiated Emission Noise

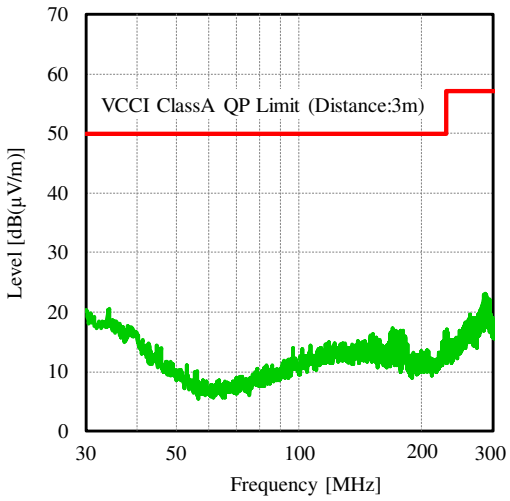
Conditions Vin : 48 VDC
Io : 100 %
Ta : 25 ℃

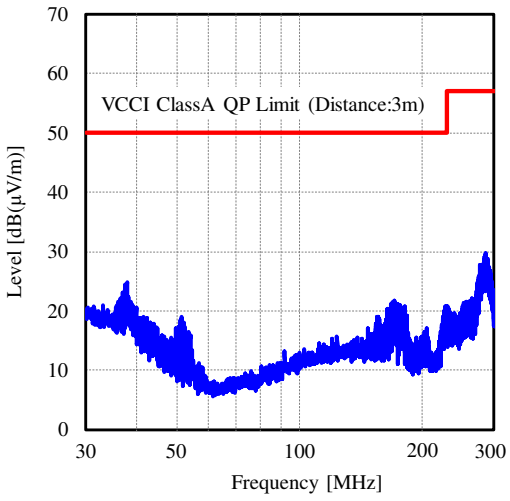
±12V





±15V





表示はピーク値
Indication is peak values.