CCG6-48-xxS

EVALUATION DATA

型式データ

INDEX

使用記号 Terminology used

		定義	Definition
Vin	・・・・・	入力電圧	Input voltage
Vo	・・・・・	出力電圧	Output voltage
V_{RC}	・・・・・	RC電圧	RC voltage
Iin	・・・・・	入力電流	Input current
Io	・・・・・	出力電流	Output current
Ta	・・・・・	周囲温度	Ambient temperature
f	・・・・・	周波数	Frequency

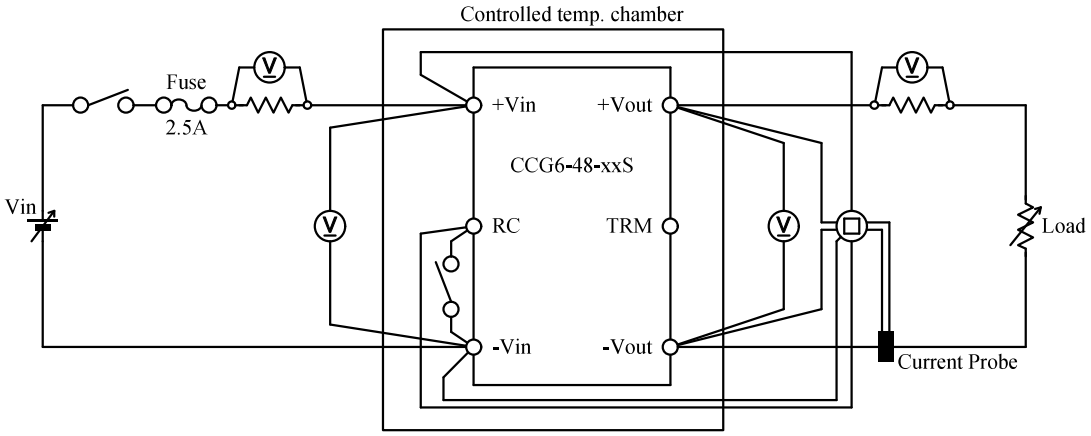
※ 当社測定条件における結果であり、参考値としてお考え願います。
Test results are reference data based on our measurement condition.

1. 測定方法 Evaluation Method

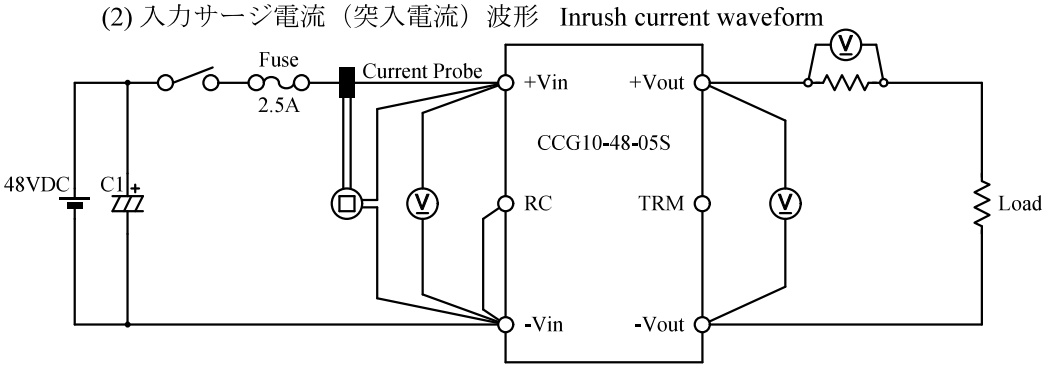
1-1. 測定回路 Measurement Circuits

(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



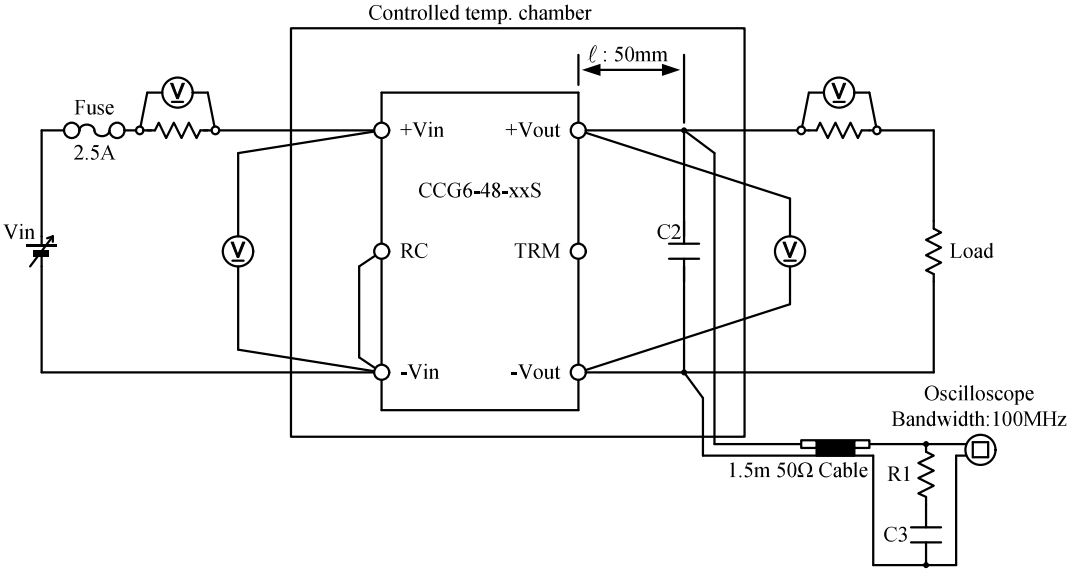
(2) 入力サージ電流（突入電流）波形 Inrush current waveform



CCG6-48-xxSの入力サージ電流特性はCCG10-48-05Sと同等です。

CCG6-48-xxS have the same Inrush current characteristics as CCG10-48-05S data.

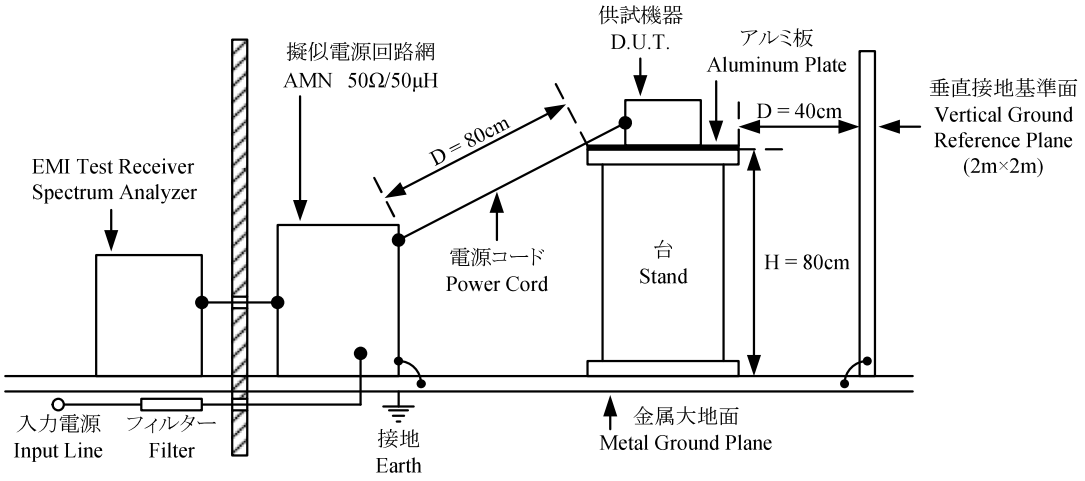
(3) 出力リップルノイズ電圧、波形 Output ripple and noise voltage and waveform



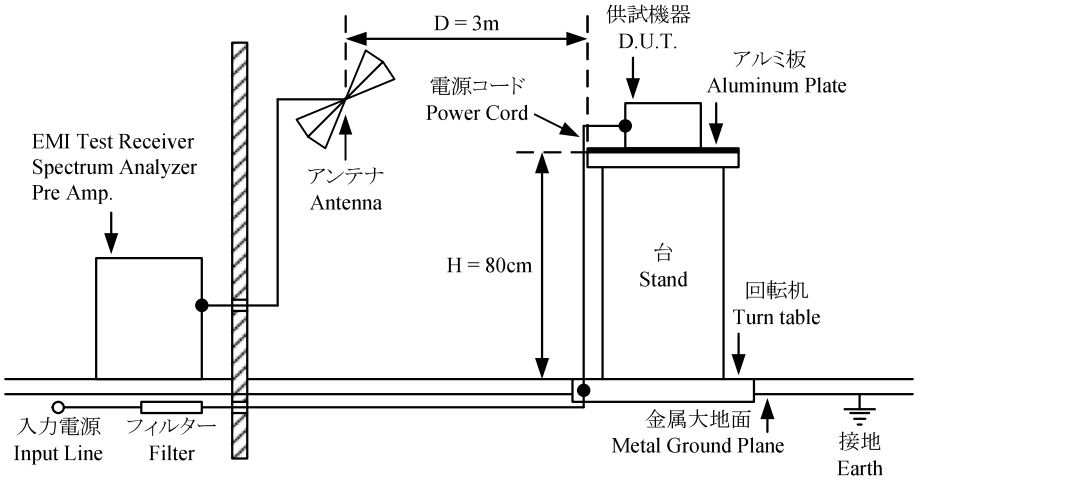
C1 : 4000uF Electrolytic Capacitor
C2 : 1uF Ceramic Capacitor
C3 : 4700pF Ceramic Capacitor
R1 : 50Ω

(4) EMI特性　Electro-Magnetic Interference characteristics

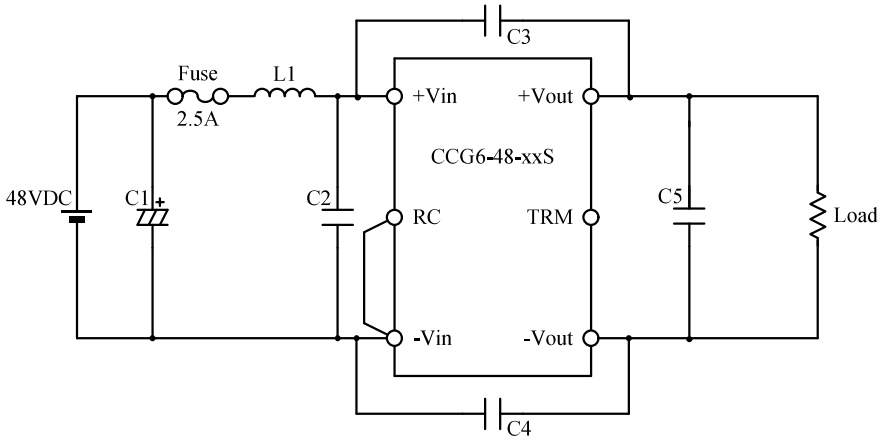
(a) 雑音端子電圧(帰還ノイズ) Conducted Emission Noise



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



VCCI class A 対応アプリケーション　VCCI class A application system



C1	: 100V	39uF	Electrolytic Capacitor	(ELXV101ELL390MH20D,Nippon Chemi-con)
C2	: 100V	2.2uF	Ceramic Capacitor	(C3216X7S2A225KT,TDK)
C3	: 2kV	1000pF	Ceramic Capacitor	(C3225X7S3D102K200AA,TDK)
C4	: 2kV	1000pF	Ceramic Capacitor	(C3225X7S3D102K200AA,TDK)
C5	: 25V	10uF	Ceramic Capacitor	(C3216X7R1E106KT,TDK)
L1	: 1.4A	22uH	Normal Mode Choke Coil	(LQH5BPN220MT0L,MURATA)

1-2. 使用測定機器 List of equipment used

	EQUIPMENT USED	MANUFACTURER	MODEL NO.
1	DIGITAL STORAGE OSCILLOSCOPE	YOKOGAWA ELECT.	DL1740E / DL1740EL
2	DIGITAL MULTIMETER	AGILENT	34970A
3	CURRENT PROBE	YOKOGAWA ELECT.	701932
4	CURRENT PROBE	AGILENT	N2774A
5	SHUNT RESISTER	YOKOGAWA ELECT.	2215
6	DYNAMIC DUMMY LOAD	KIKUSUI	PLZ-164WL
7	CVCF	NF	ES10000S
8	DC POWER SUPPLY	TDK-Lambda	GEN80-9.5 / GENH80-9.5
9	DC POWER SUPPLY	TAKASAGO	EX-750H2
10	CONTROLLED TEMP. CHAMBER	ESPEC	SU-261 / SU-262
11	EMI TEST RECEIVER / SPECTRUM ANALYZER	ROHDE & SCHWARZ	ESR3
12	PRE AMP.	SONOMA	310N
13	AMN	KIKUSUI	KNW-242C
14	ANTENNA	SCHWARZBECK	BBA9106/VHA9103
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 ℃

Io \ Vin	18VDC	24VDC	48VDC	76VDC	Line regulation	
0%	3.2845V	3.2849V	3.2848V	3.2848V	0.4mV	0.012%
50% (0.8A)	3.2843V	3.2845V	3.2845V	3.2845V	0.2mV	0.006%
100% (1.6A)	3.2844V	3.2845V	3.2845V	3.2845V	0.1mV	0.003%
Load regulation	0.2mV	0.4mV	0.3mV	0.3mV		
	0.006%	0.012%	0.009%	0.009%		

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

Ta	-40°C	25°C	70°C	Temperature stability	
Vo	3.2863V	3.2845V	3.2828V	3.5mV	0.106%

5V

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

Io \ Vin	18VDC	24VDC	48VDC	76VDC	Line regulation	
0%	4.9725V	4.9733V	4.9733V	4.9733V	0.8mV	0.016%
50% (0.6A)	4.9728V	4.9731V	4.9731V	4.9732V	0.4mV	0.008%
100% (1.2A)	4.9737V	4.9738V	4.9738V	4.9738V	0.1mV	0.002%
Load regulation	1.2mV	0.7mV	0.7mV	0.6mV		
	0.024%	0.014%	0.014%	0.012%		

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

Ta	-40°C	25°C	70°C	Temperature stability	
Vo	4.9648V	4.9738V	4.9787V	13.9mV	0.278%

12V

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

Io \ Vin	18VDC	24VDC	48VDC	76VDC	Line regulation	
0%	12.0024V	12.0042V	12.0035V	12.0020V	2.2mV	0.018%
50% (0.25A)	12.0020V	12.0027V	12.0018V	11.9999V	2.8mV	0.023%
100% (0.5A)	12.0041V	12.0040V	12.0033V	12.0034V	0.8mV	0.007%
Load regulation	2.1mV	1.5mV	1.7mV	3.5mV		
	0.017%	0.013%	0.014%	0.029%		

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

Ta	-40°C	25°C	80°C	Temperature stability	
Vo	11.9858V	12.0033V	12.0236V	37.8mV	0.315%

15V

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

Io \ Vin	18VDC	24VDC	48VDC	76VDC	Line regulation	
0%	15.0925V	15.0931V	15.0921V	15.0918V	1.3mV	0.009%
50% (0.2A)	15.0916V	15.0918V	15.0899V	15.0885V	3.3mV	0.022%
100% (0.4A)	15.0924V	15.0923V	15.0909V	15.0894V	3.0mV	0.020%
Load regulation	0.9mV	1.3mV	2.2mV	3.3mV		
	0.006%	0.009%	0.015%	0.022%		

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

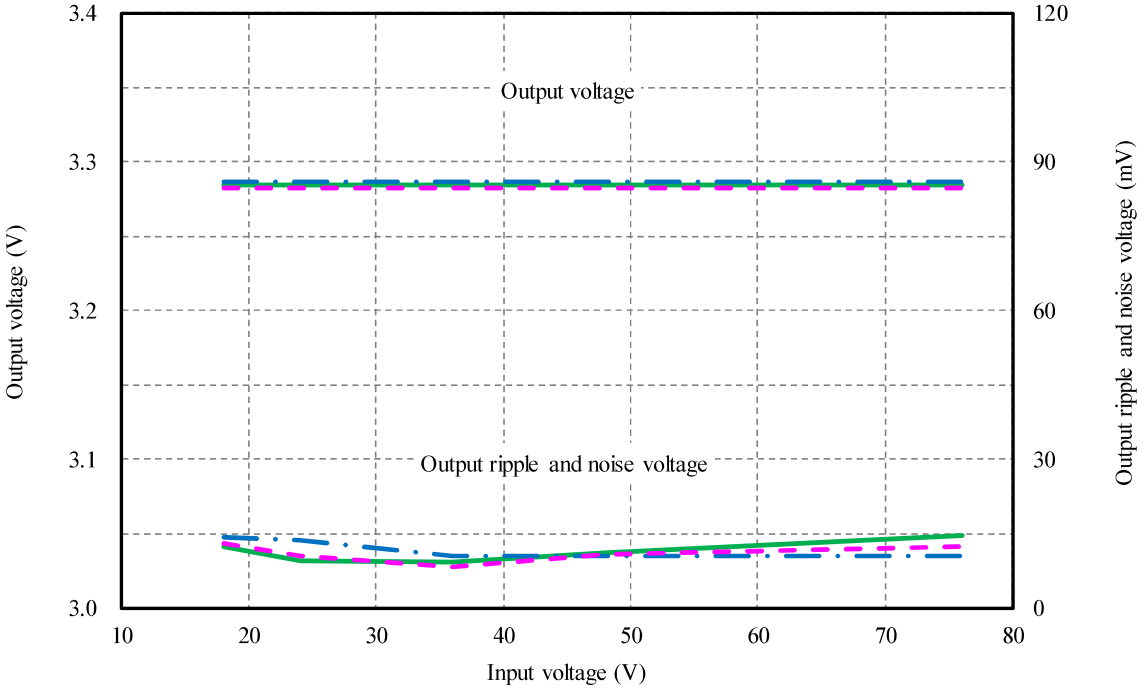
Ta	-40°C	25°C	80°C	Temperature stability	
Vo	15.0904V	15.0909V	15.0830V	7.9mV	0.053%

(2) 出力電圧・出力リップルノイズ電圧 対 入力電圧

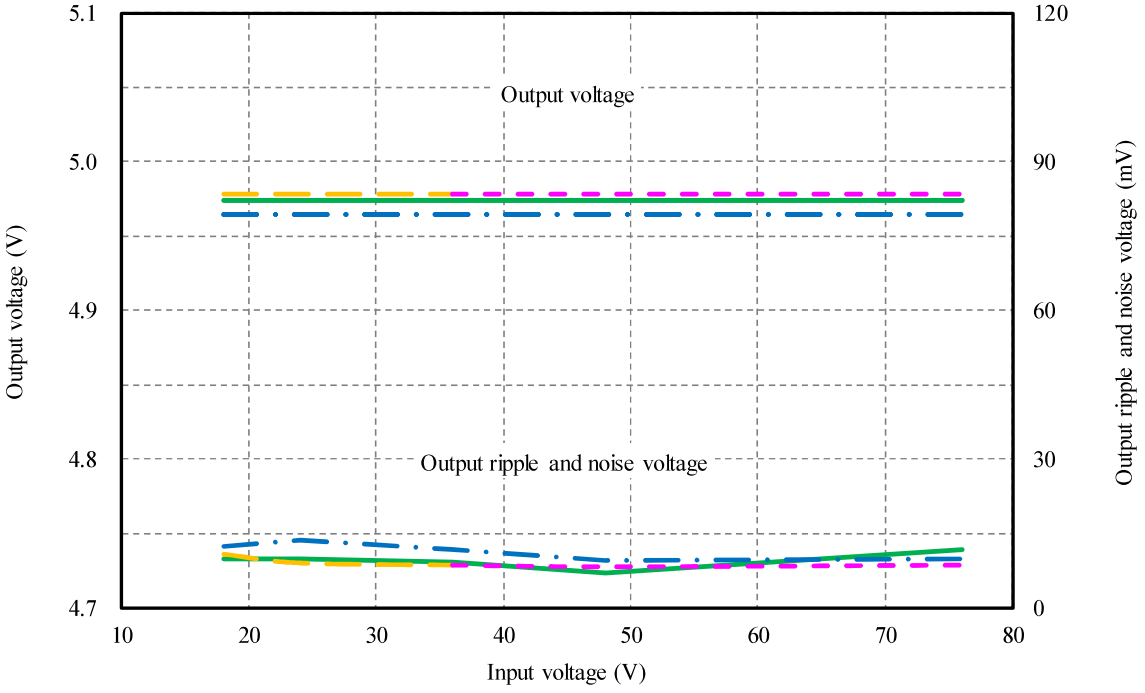
Output voltage and Output ripple and noise voltage vs. Input voltage

Conditions Io : 100 %
Ta : -40 °C
: 25 °C
: 70 °C
: 75 °C

3.3V



5V

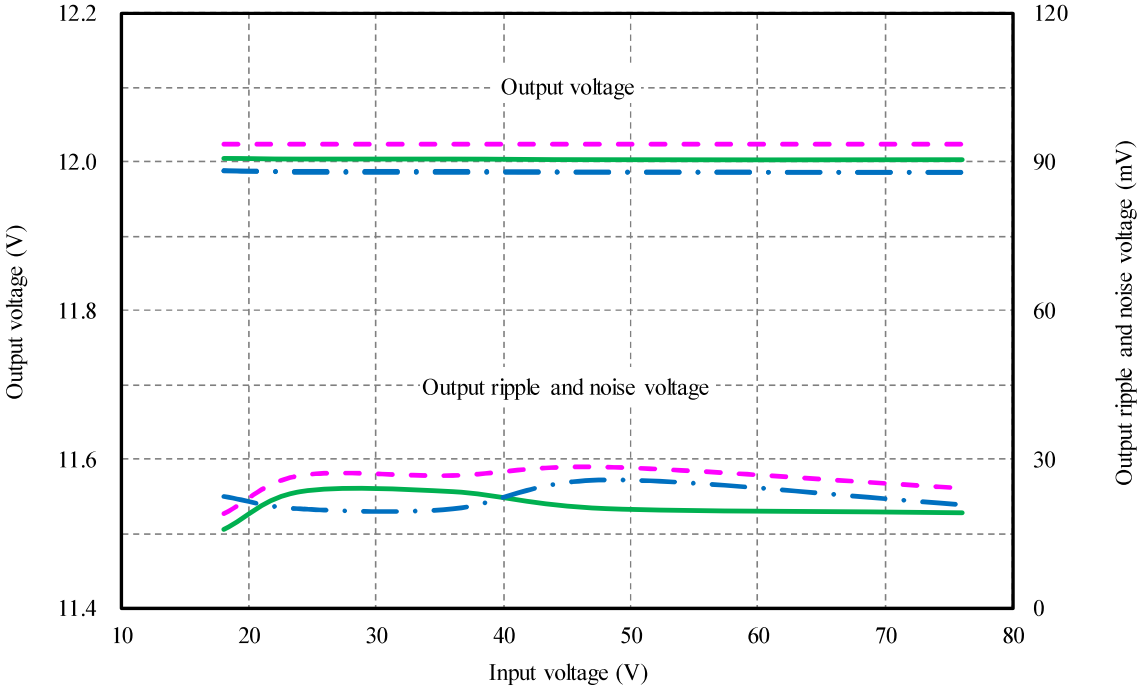


(2) 出力電圧・出力リップルノイズ電圧 対 入力電圧

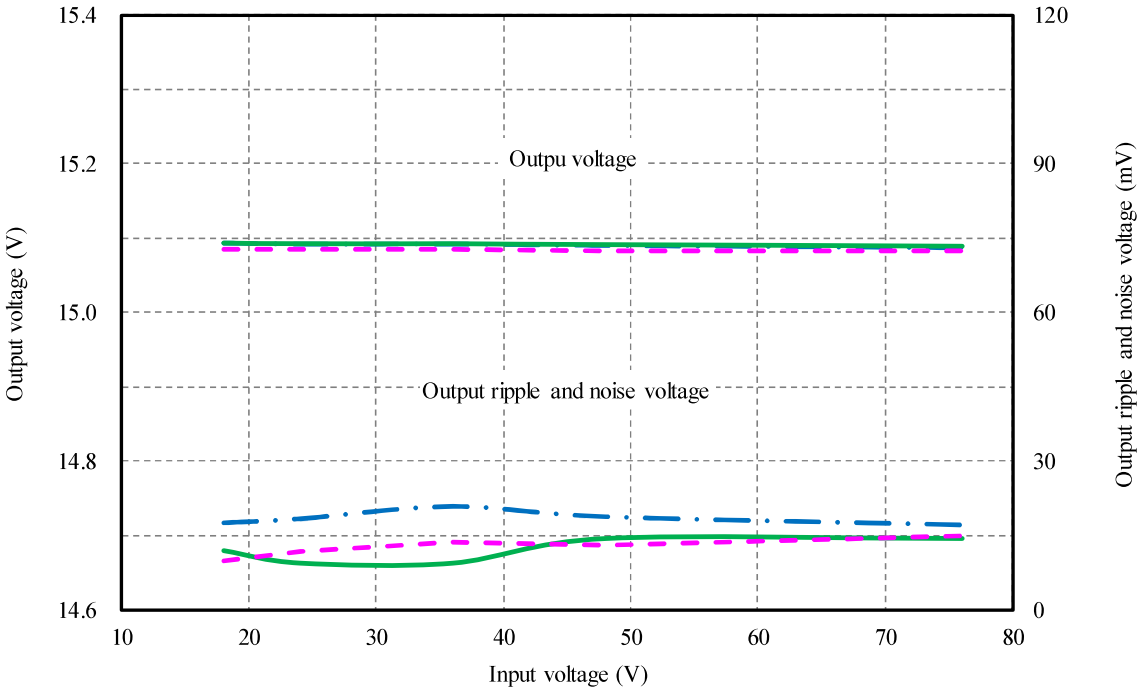
Output voltage and Output ripple and noise voltage vs. Input voltage

Conditions Io : 100 %
Ta : -40 °C
: 25 °C
: 80 °C

12V



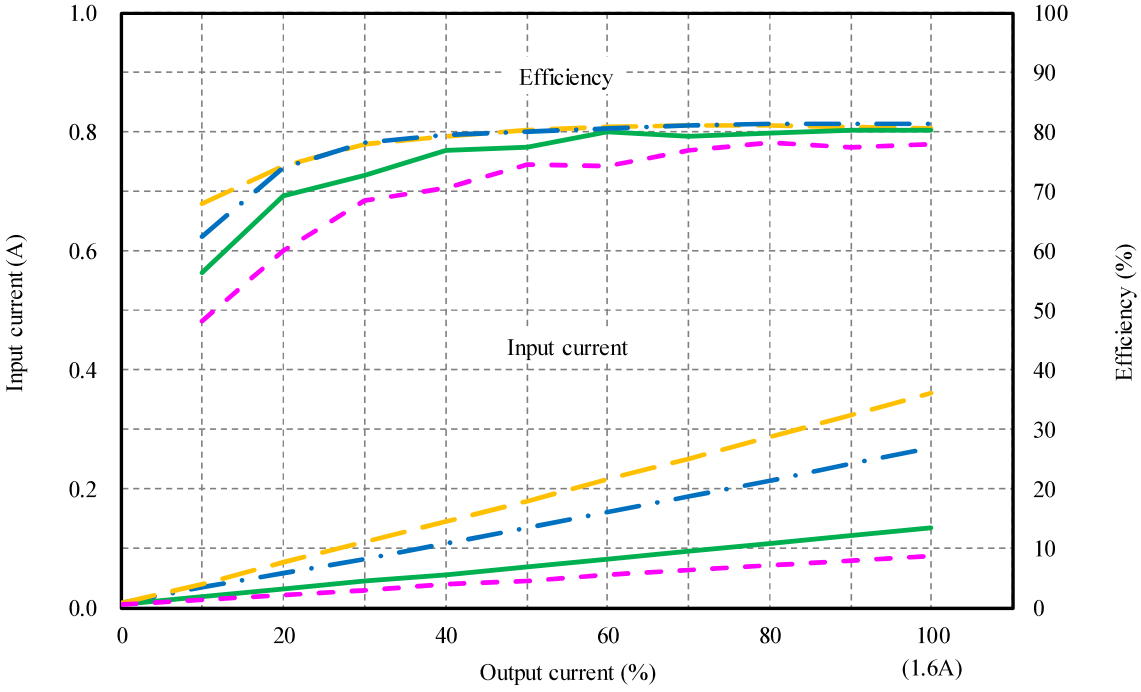
15V



(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

3.3V



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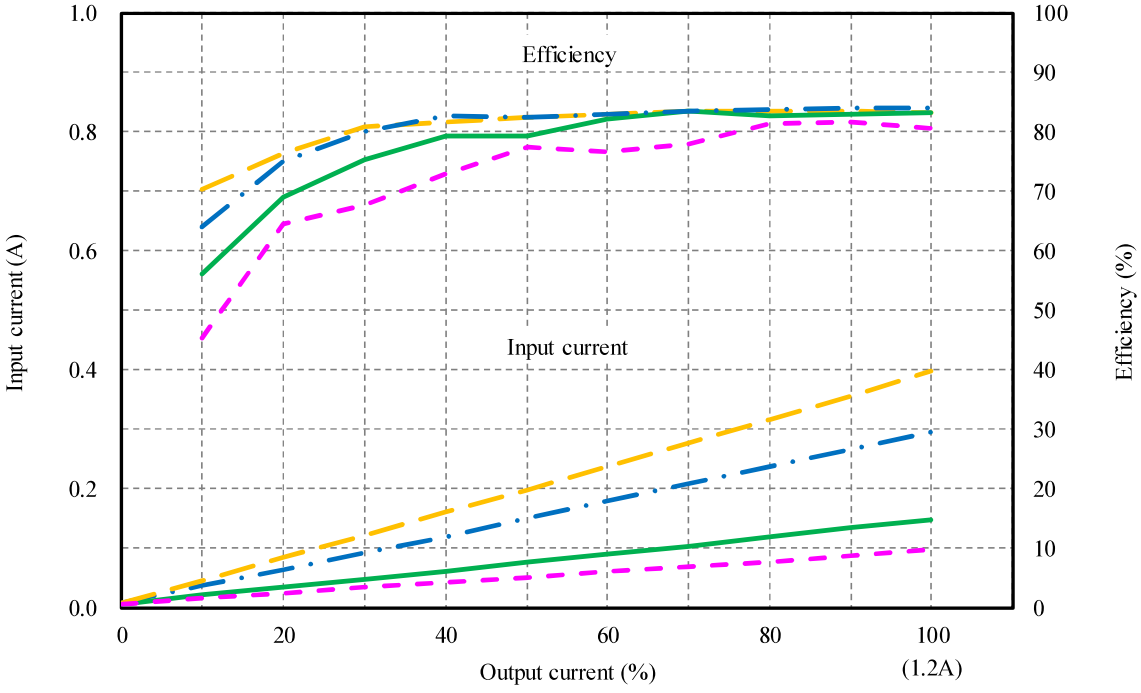
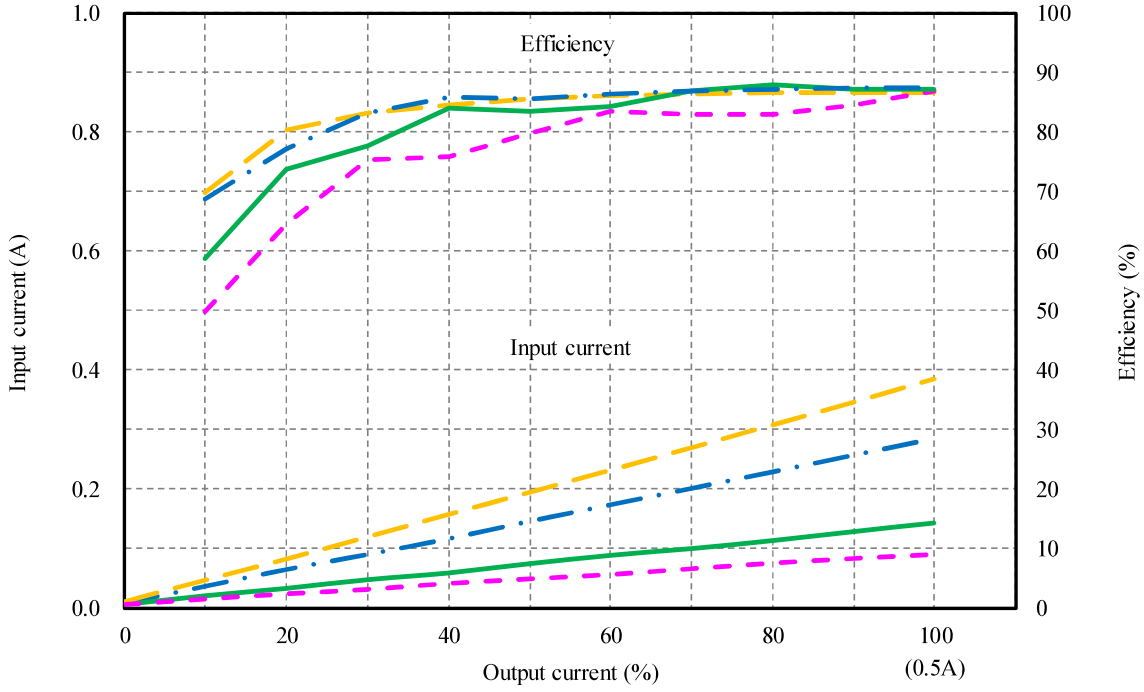


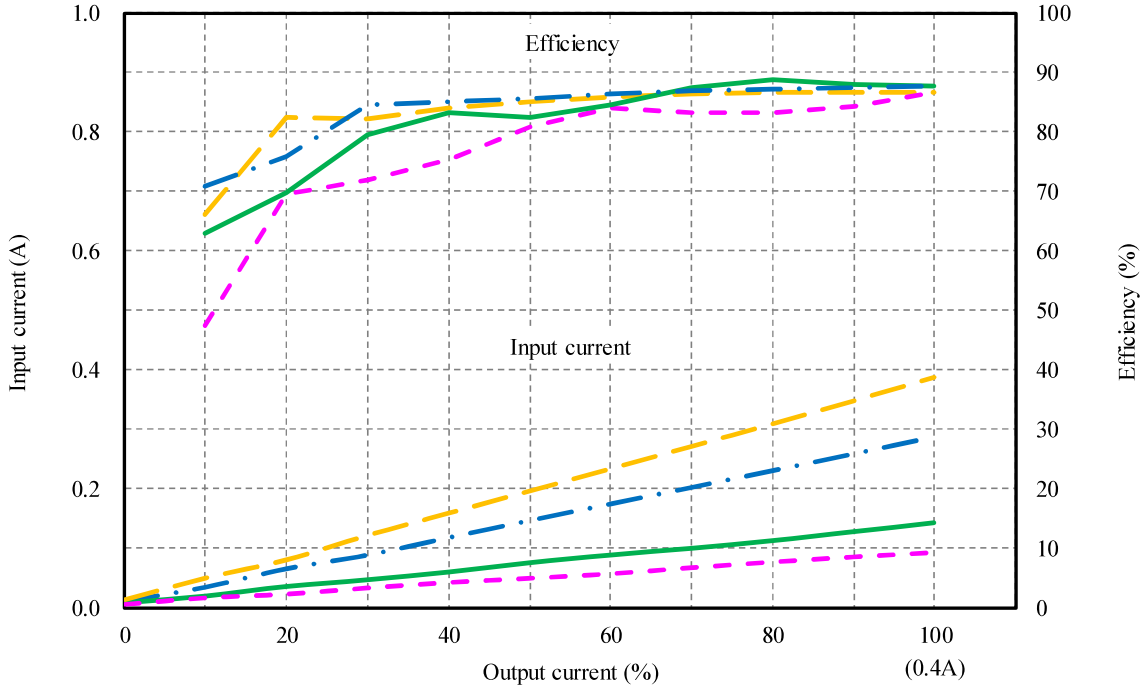
(3) 入力電流・効率 対 出力電流 Input current and Efficiency vs. Output current

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

12V



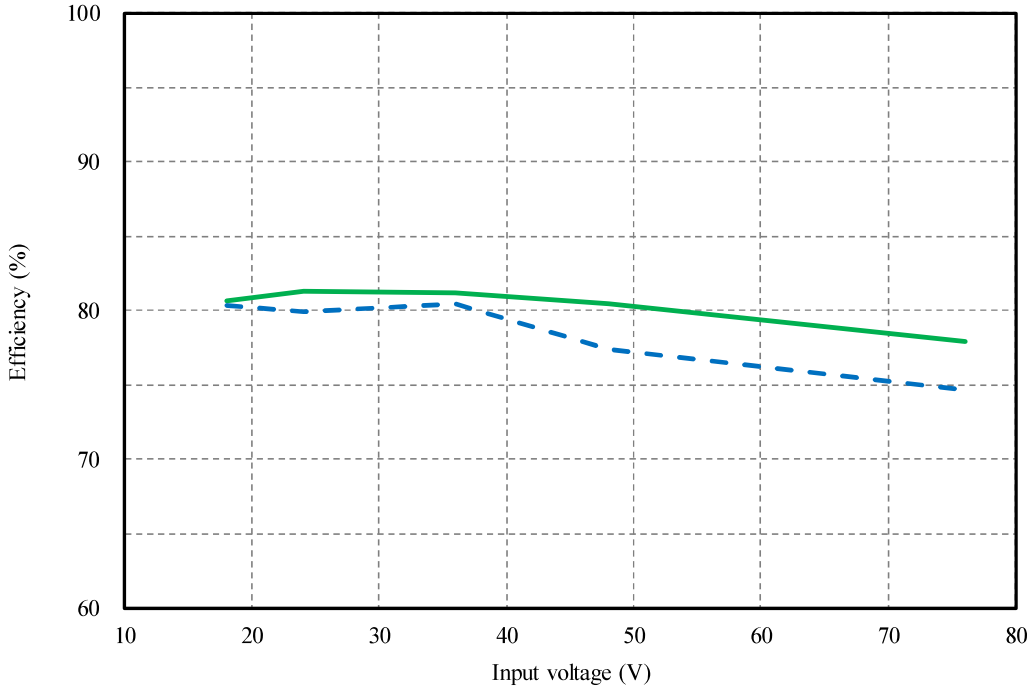
15V



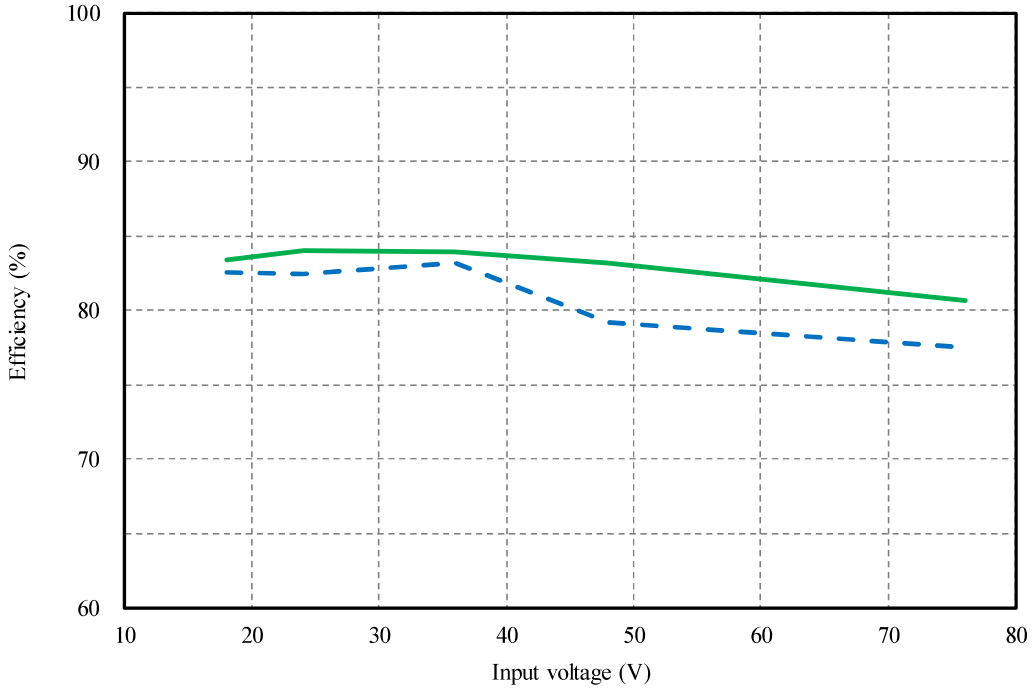
(4) 効率 対 入力電圧 Efficiency vs. Input voltage

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

3.3V



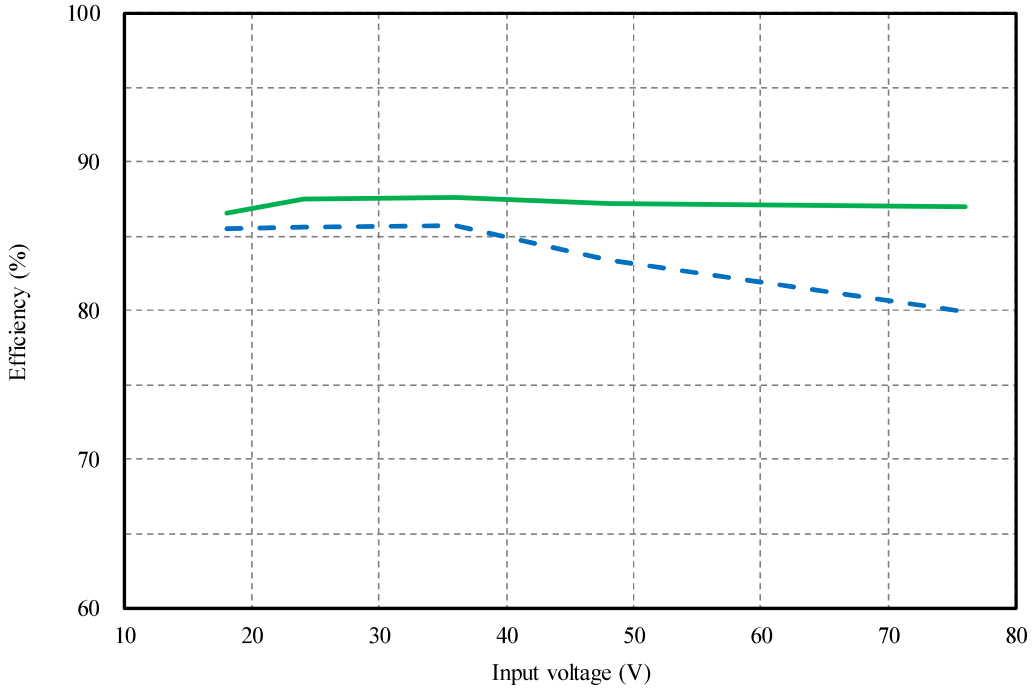
5V



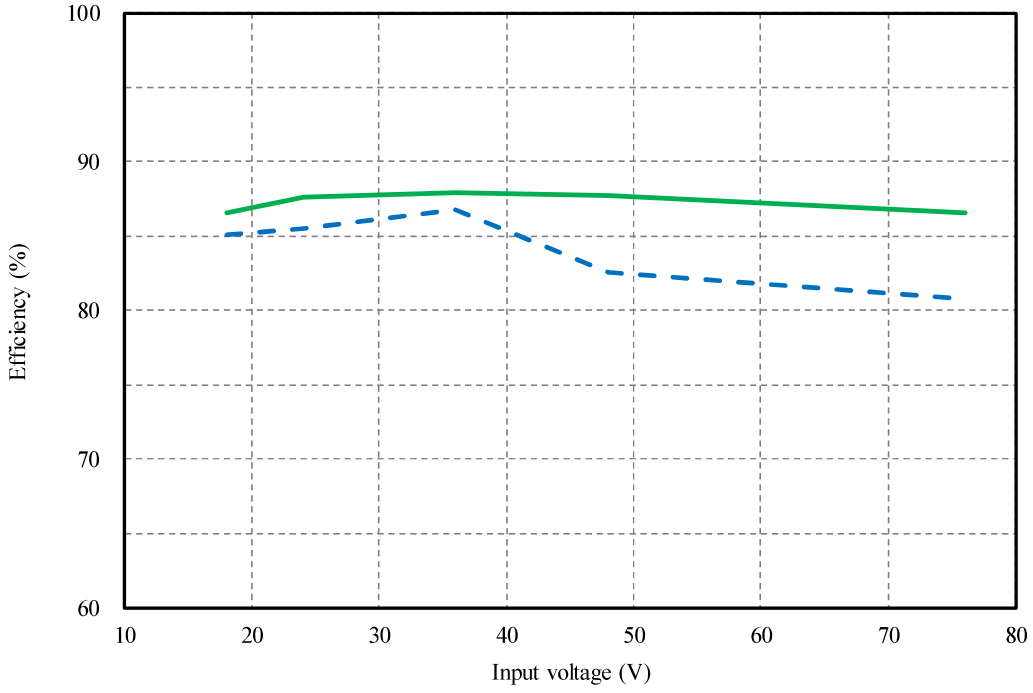
(4) 効率 対 入力電圧 Efficiency vs. Input voltage

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

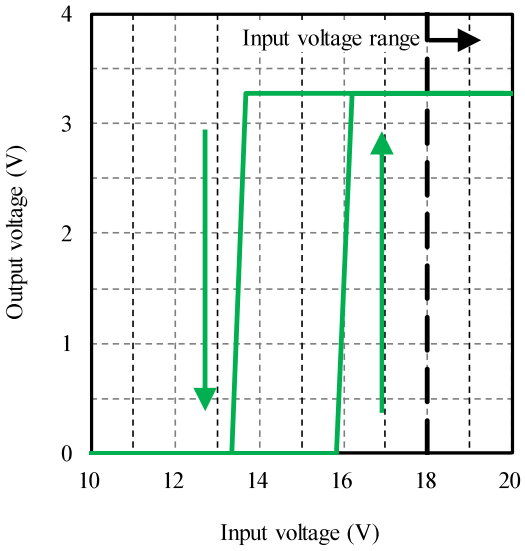
出力電圧 対 入力電圧
Output voltage vs. Input voltage

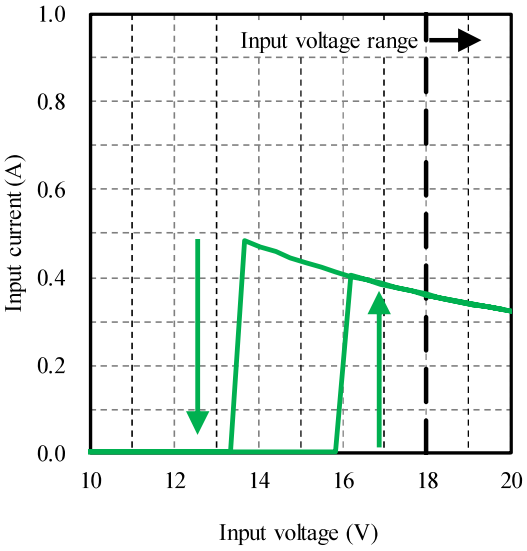
Conditions Io : 100 %
Ta : 25 °C

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

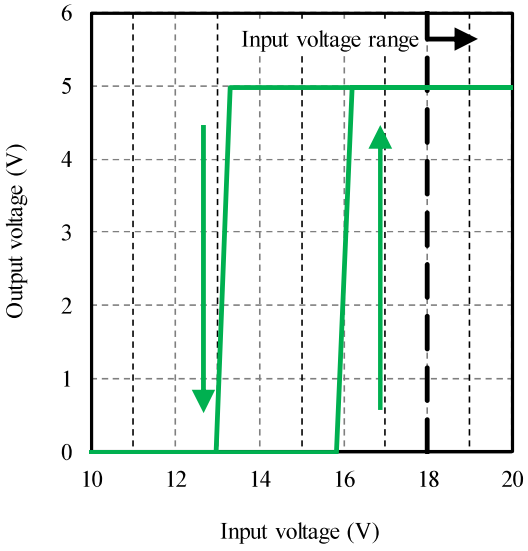
Conditions Io : 100 %
Ta : 25 °C

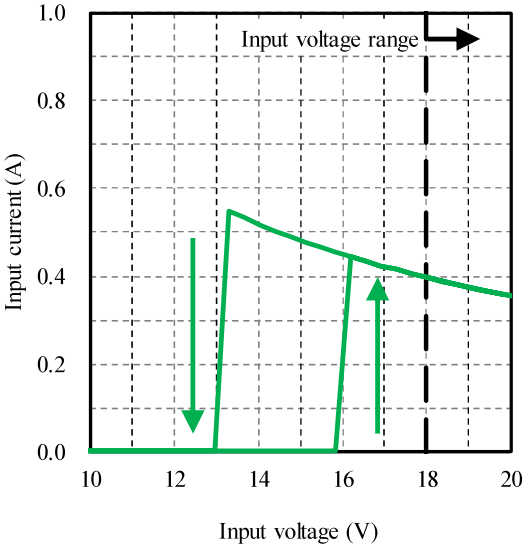
3.3V





5V





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

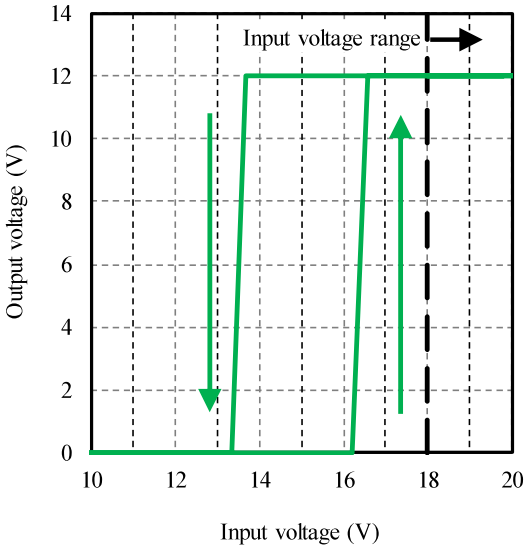
出力電圧 対 入力電圧
Output voltage vs. Input voltage

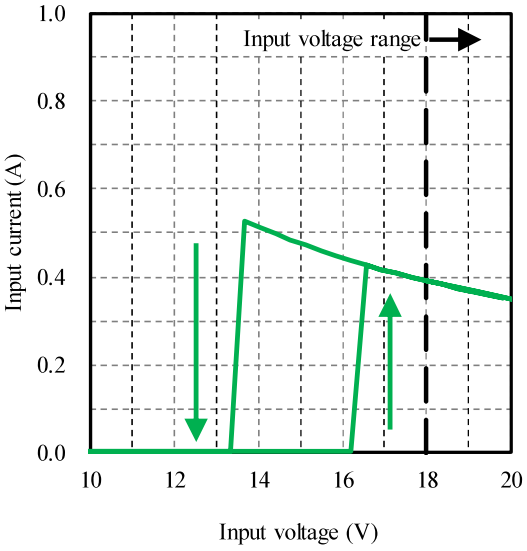
Conditions Io : 100 %
Ta : 25 °C

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

Conditions Io : 100 %
Ta : 25 °C

12V





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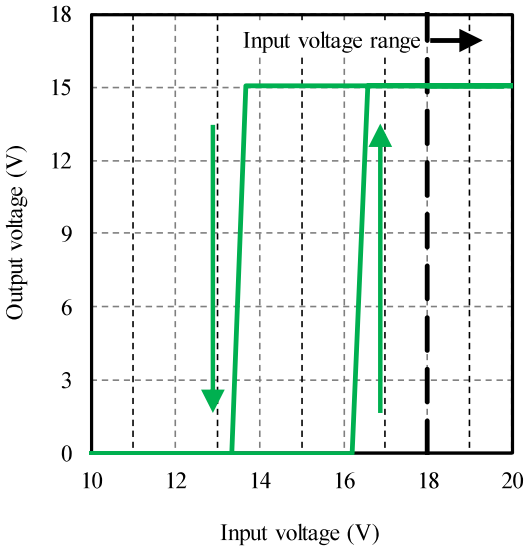
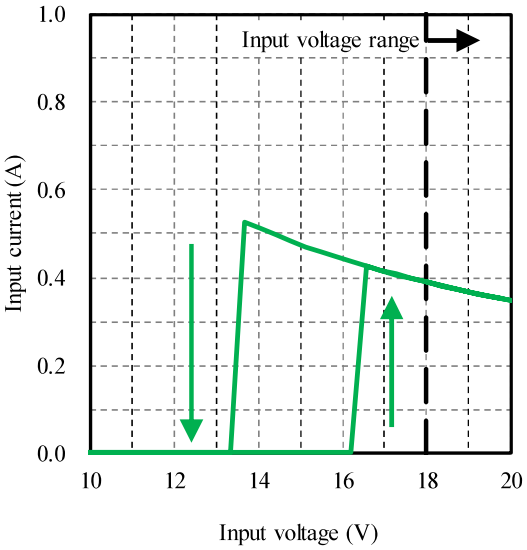
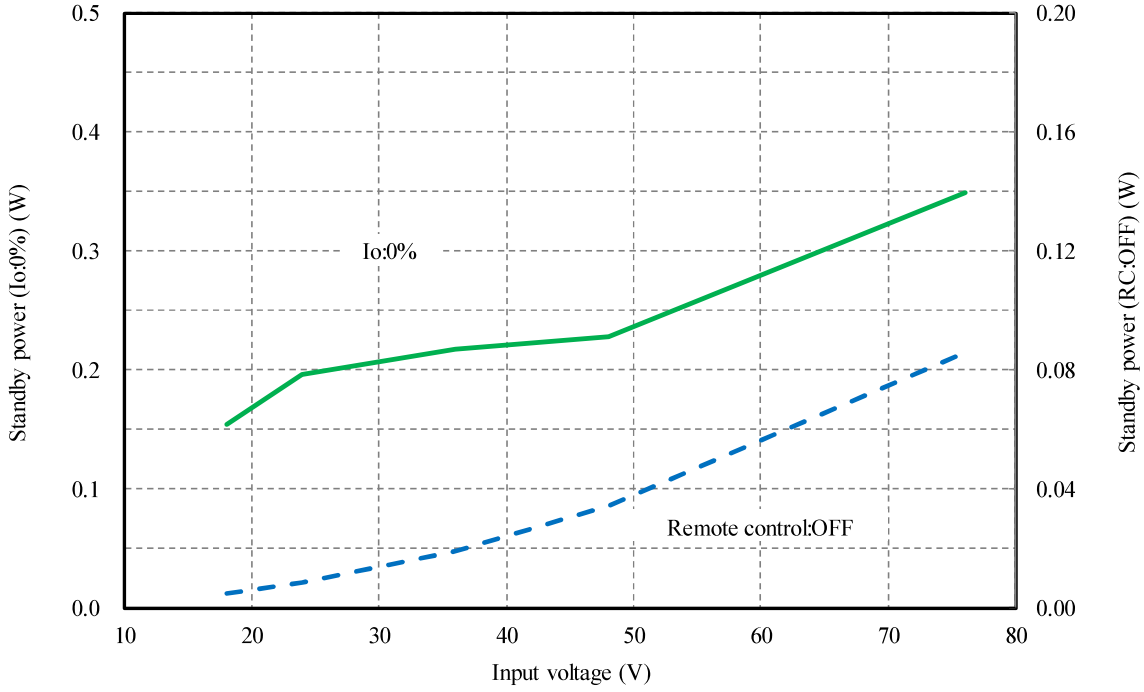




2-2. 待機電力特性 Standby power characteristics

Condition Ta : 25 °C

3.3V



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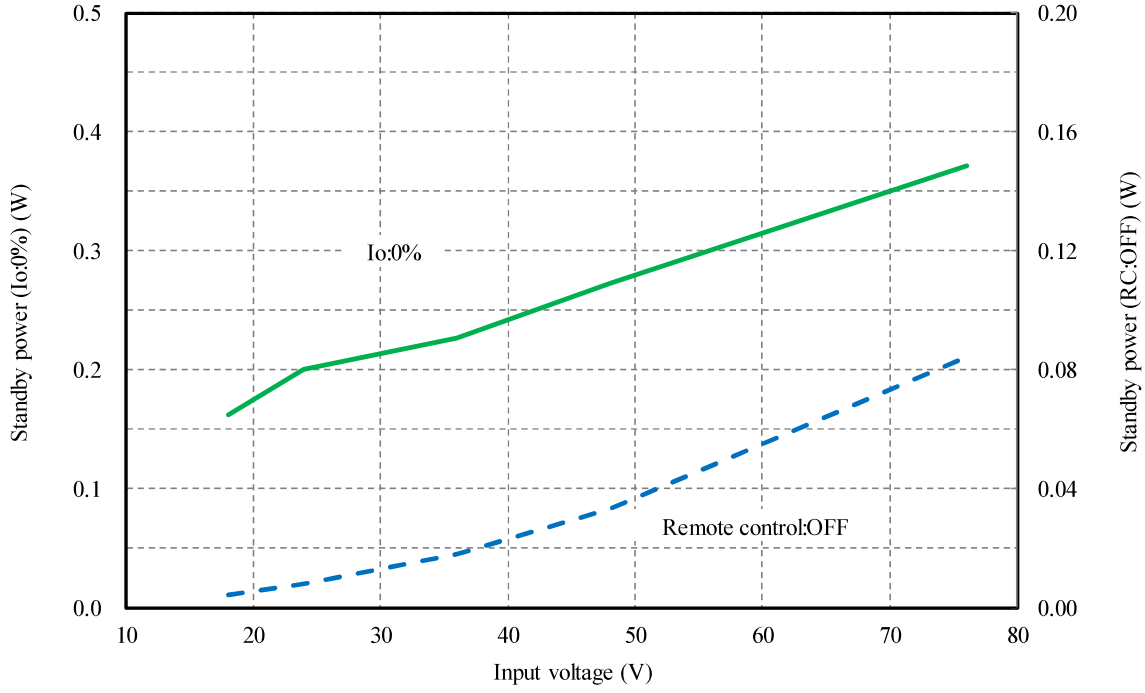
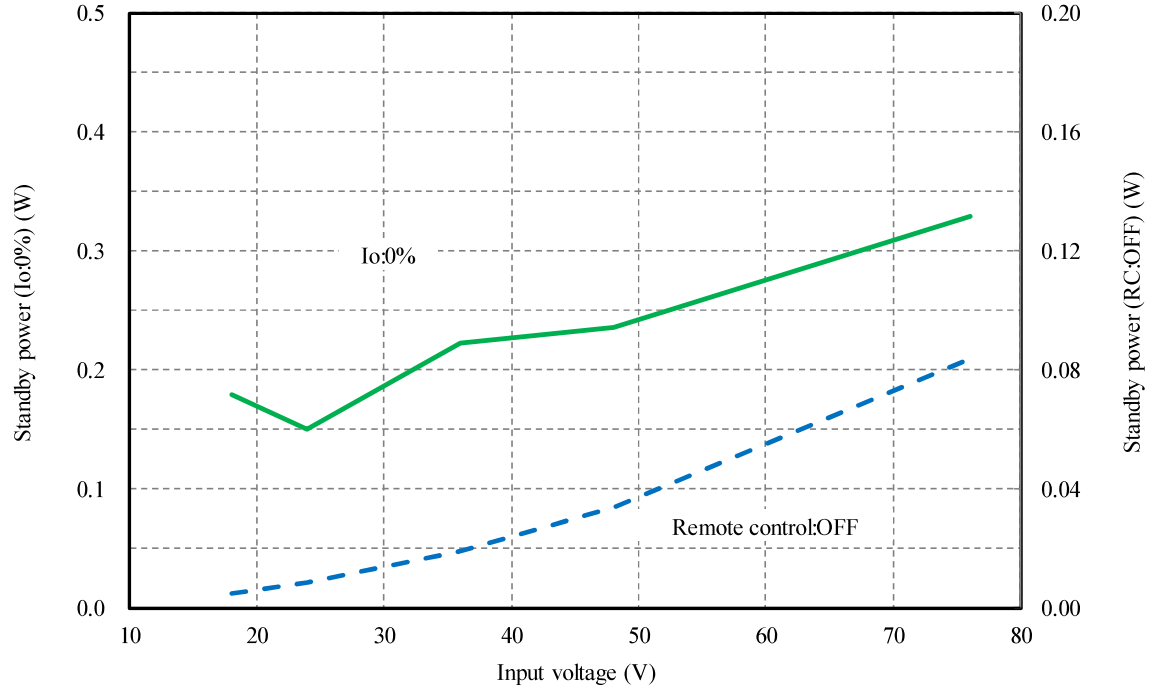


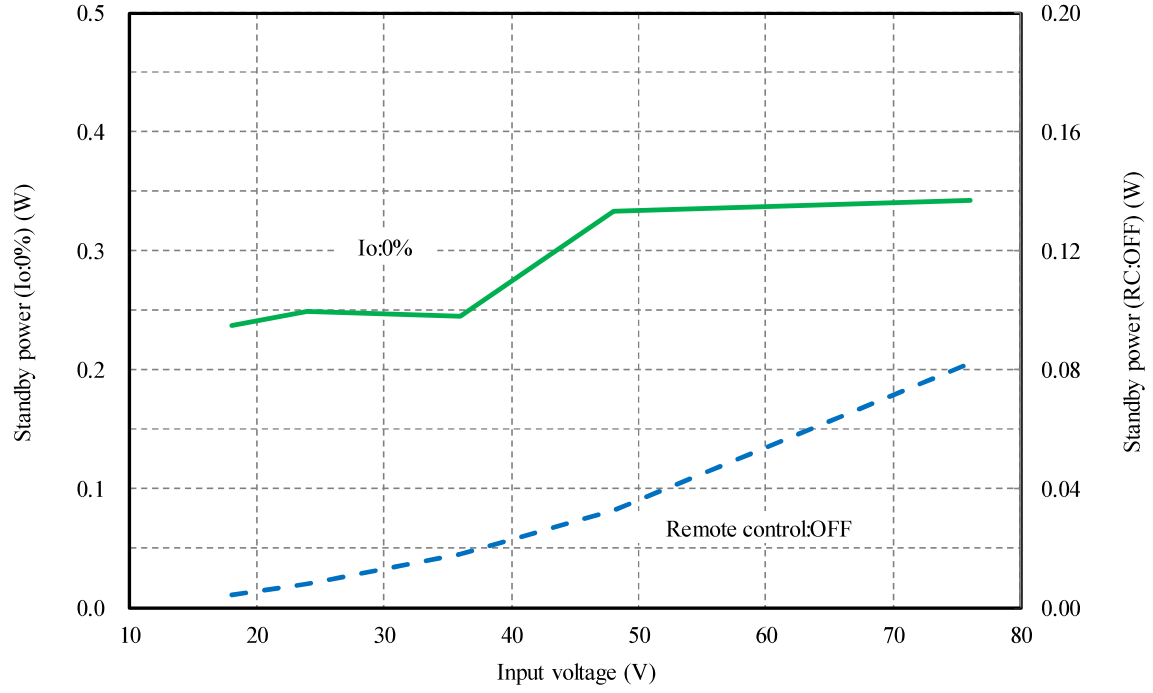
2-2. 待機電力特性 Standby power characteristics

Condition Ta : 25 °C

12V



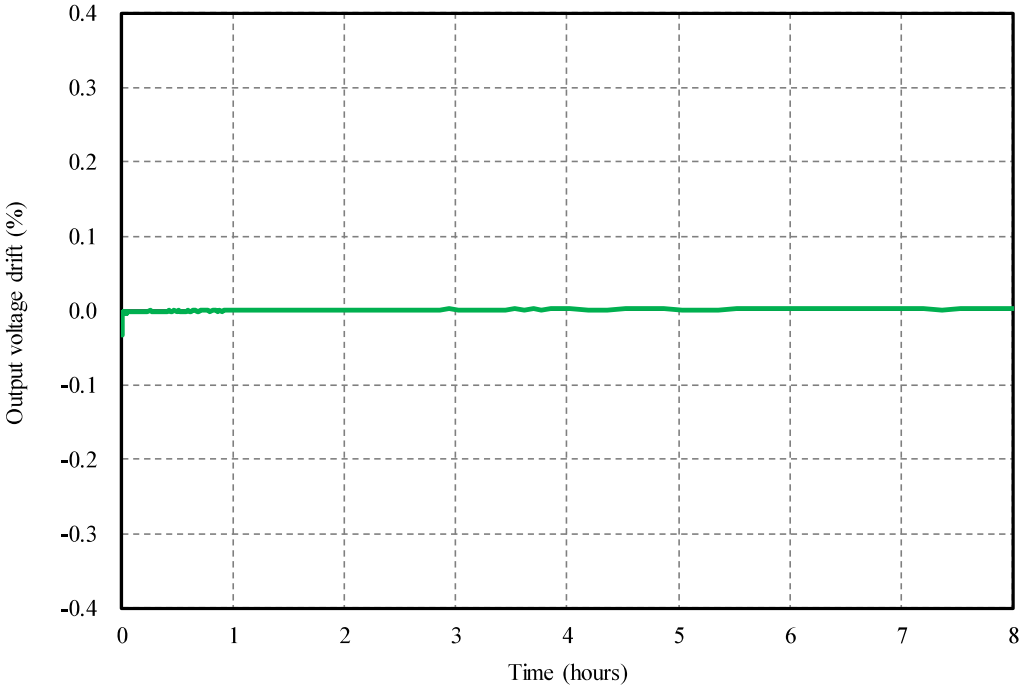
15V



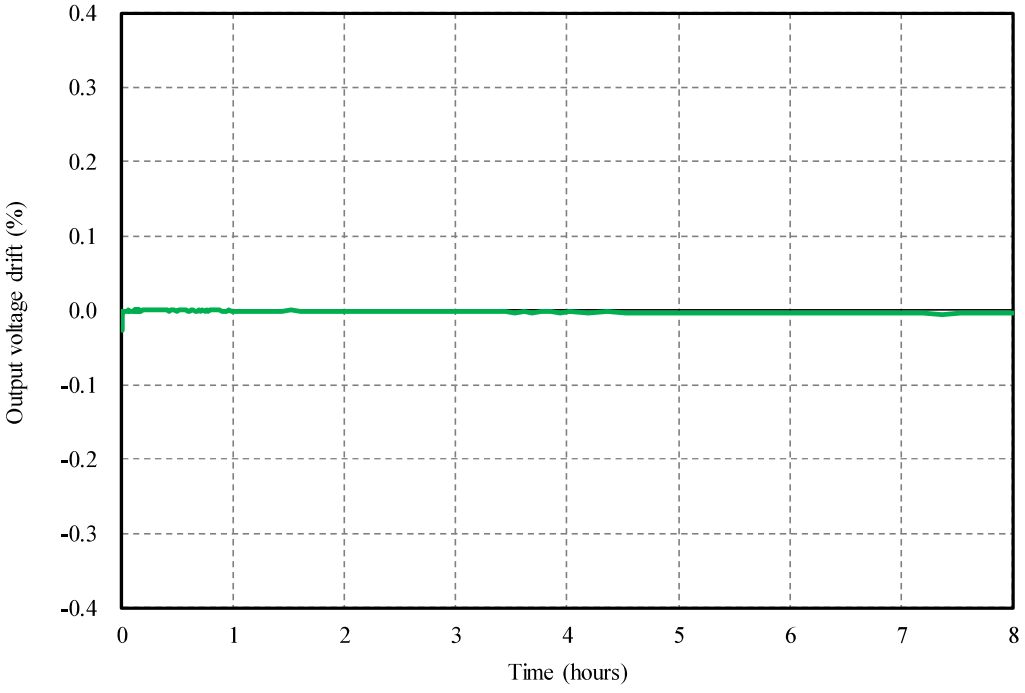
2-3. 通電ドリフト特性 Warm up voltage drift characteristics

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

3.3V



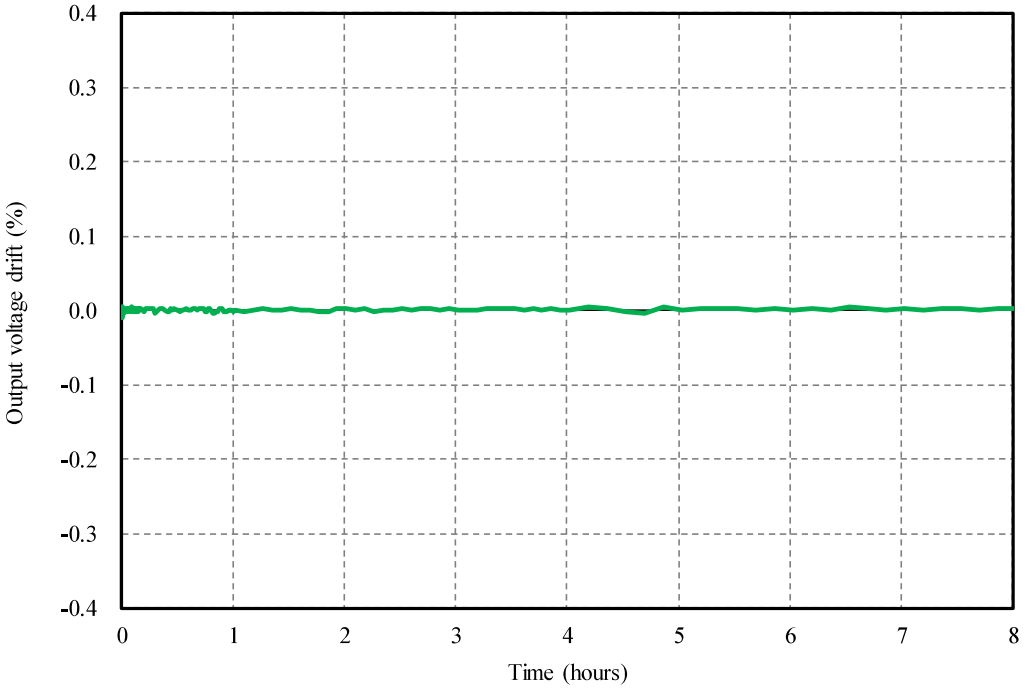
5V



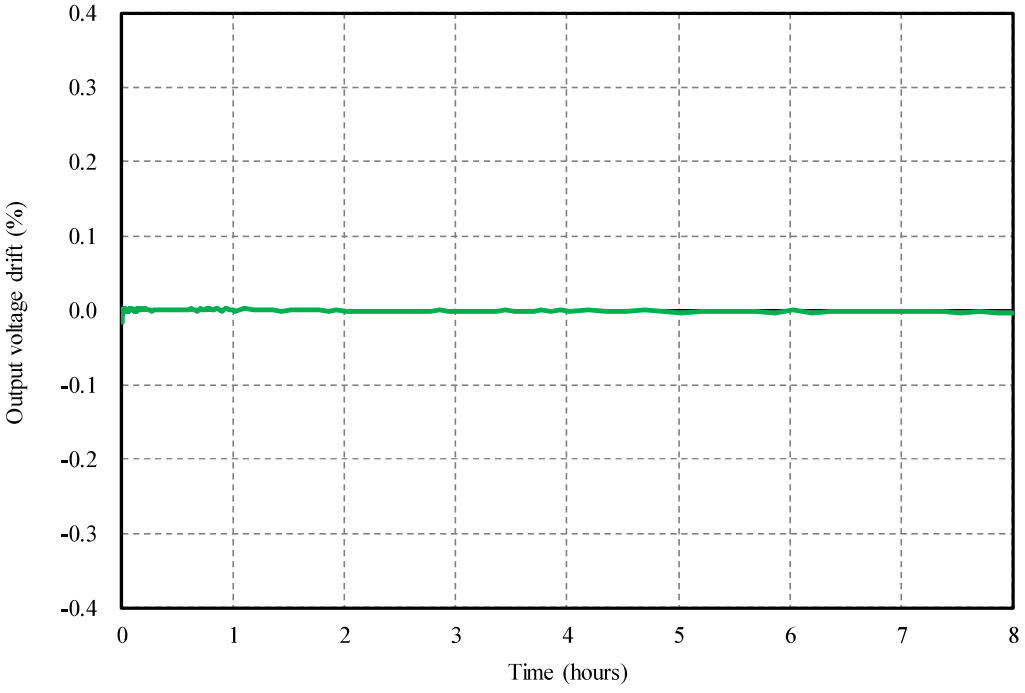
2-3. 通電ドリフト特性 Warm up voltage drift characteristics

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

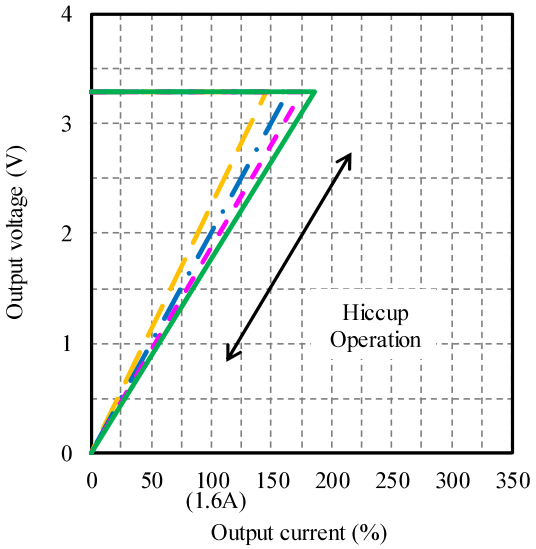
入力電圧依存性
Input voltage dependence

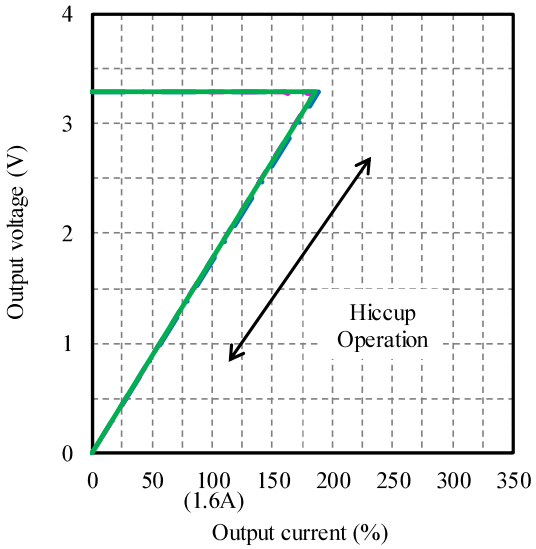
Conditions Vin : 18 VDC
: 24 VDC
: 48 VDC
: 76 VDC
Ta : 25 °C

周囲温度依存性
Ambient temperature dependence

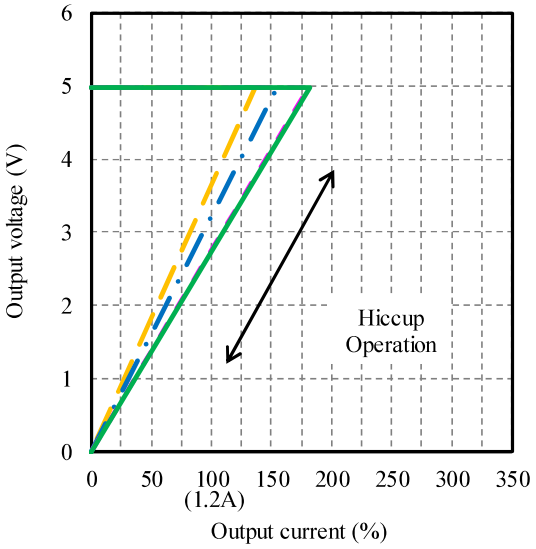
Conditions Vin : 48 VDC
Ta : -40 °C
: 25 °C
: 70 °C

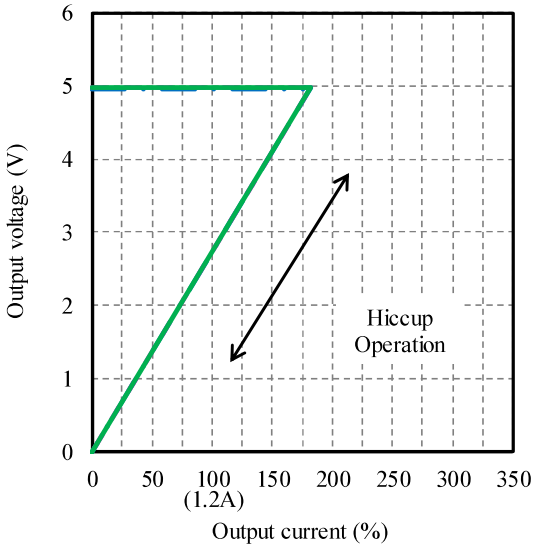
3.3V





5V





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

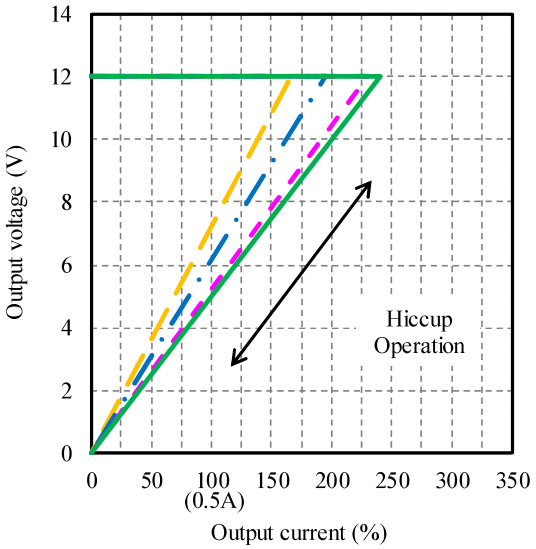
入力電圧依存性
Input voltage dependence

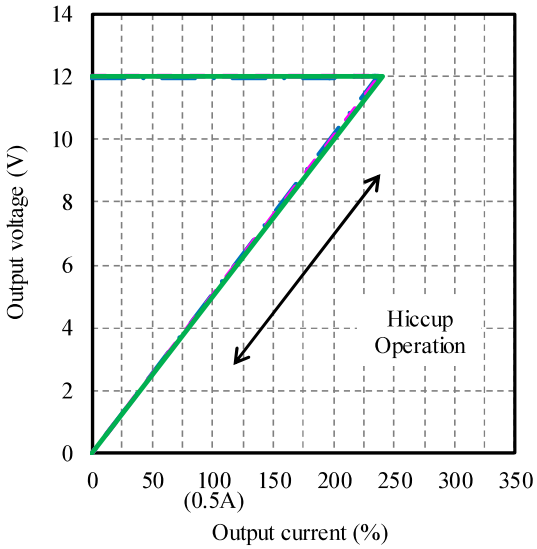
Conditions Vin : 18 VDC
: 24 VDC
: 48 VDC
: 76 VDC
Ta : 25 °C

周囲温度依存性
Ambient temperature dependence

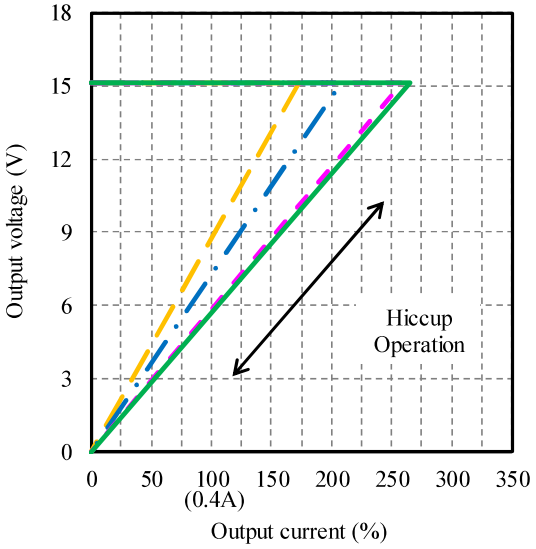
Conditions Vin : 48 VDC
Ta : -40 °C
: 25 °C
: 80 °C

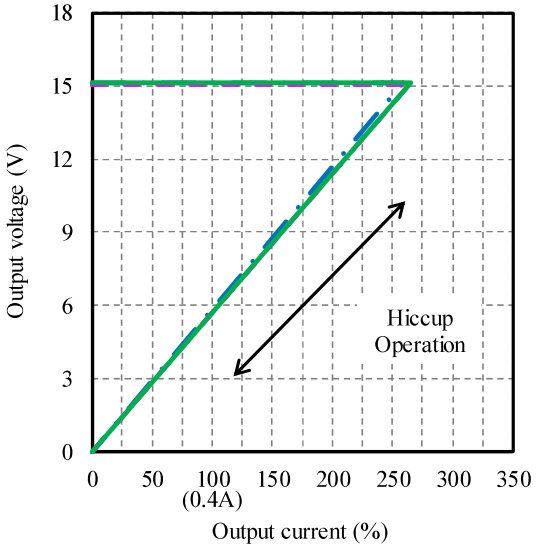
12V





15V

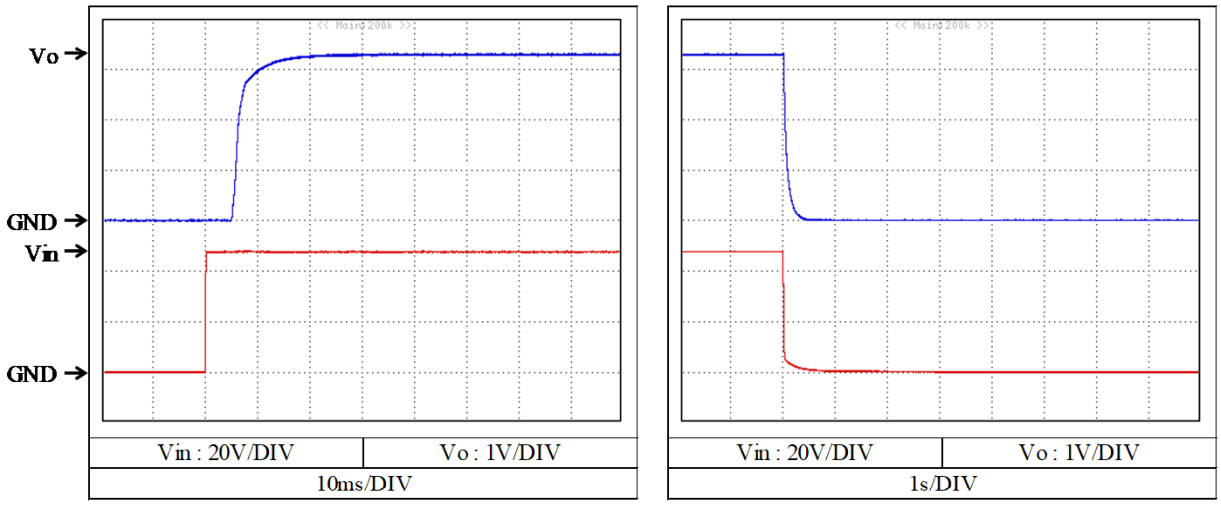




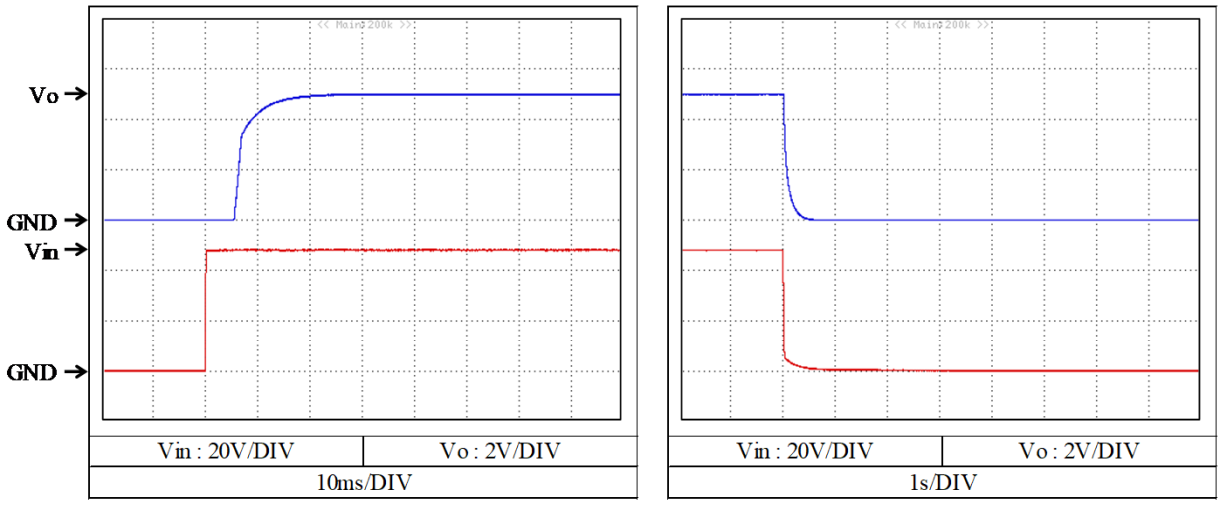
2-5. 出力立ち上がり・立ち下がり特性 Output rise and fall characteristics

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

3.3V



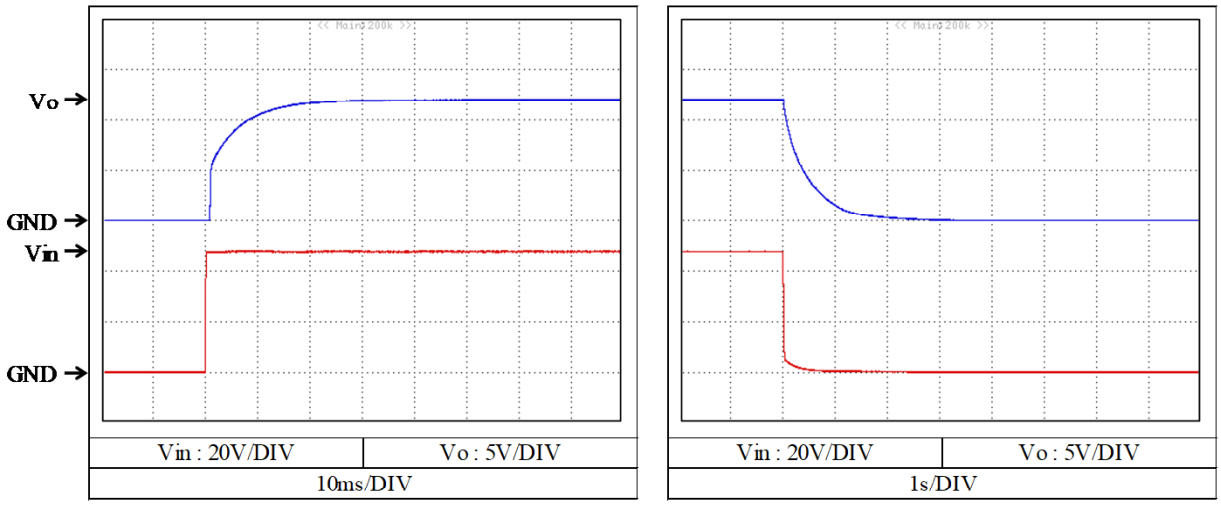
5V



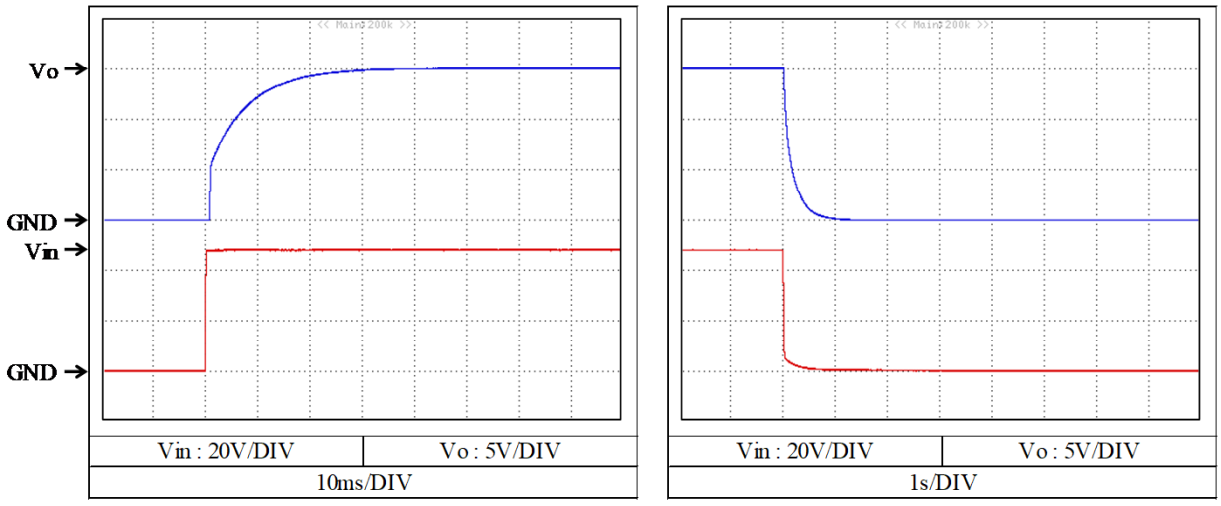
2-5. 出力立ち上がり・立ち下がり特性 Output rise and fall characteristics

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

12V



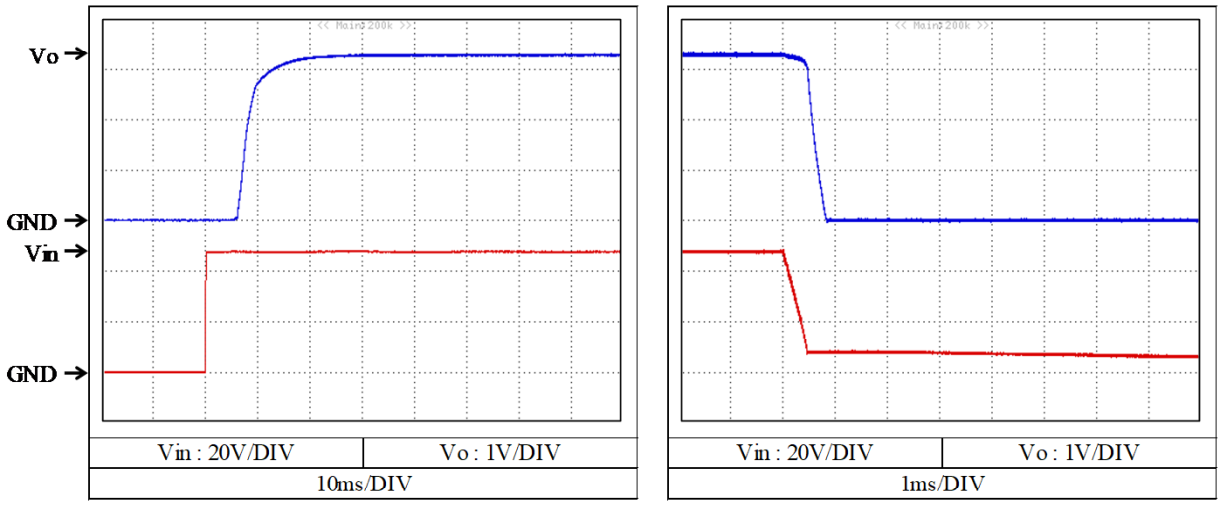
15V



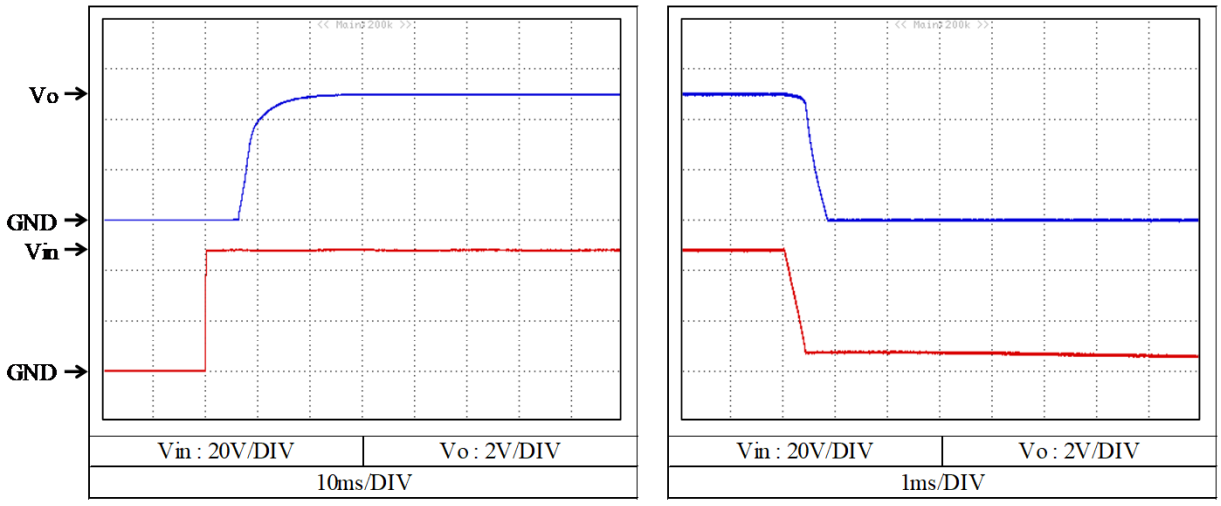
2-5. 出力立ち上がり・立ち下がり特性 Output rise and fall characteristics

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

3.3V



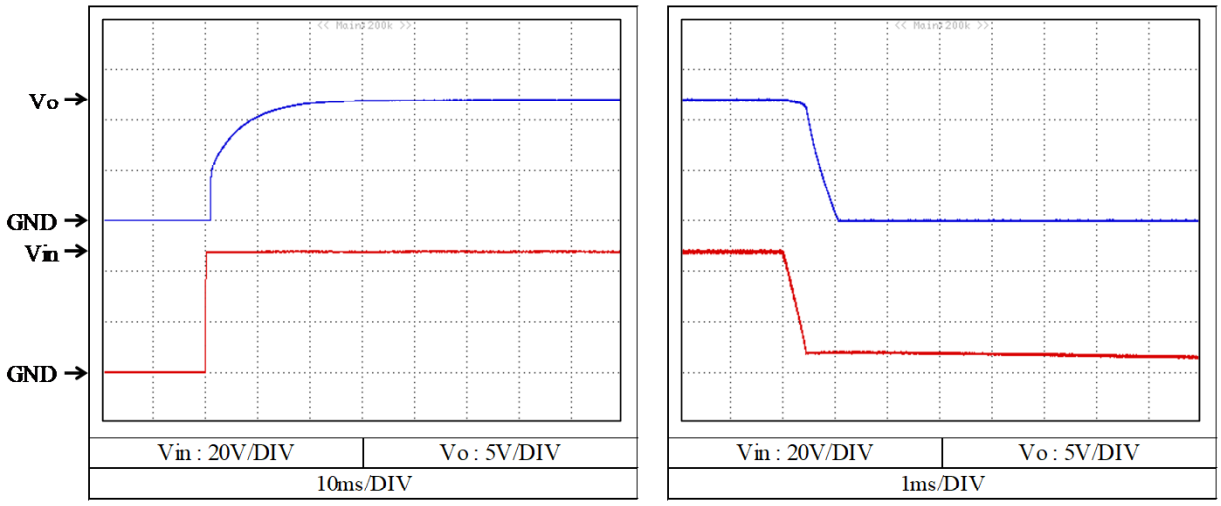
5V



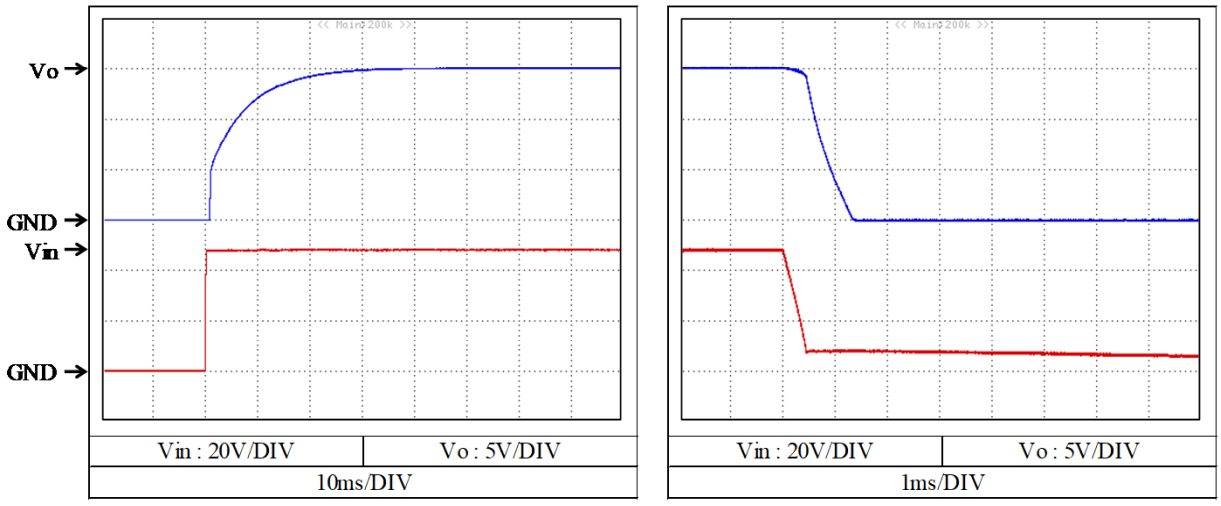
2-5. 出力立ち上がり・立ち下がり特性 Output rise and fall characteristics

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

12V



15V

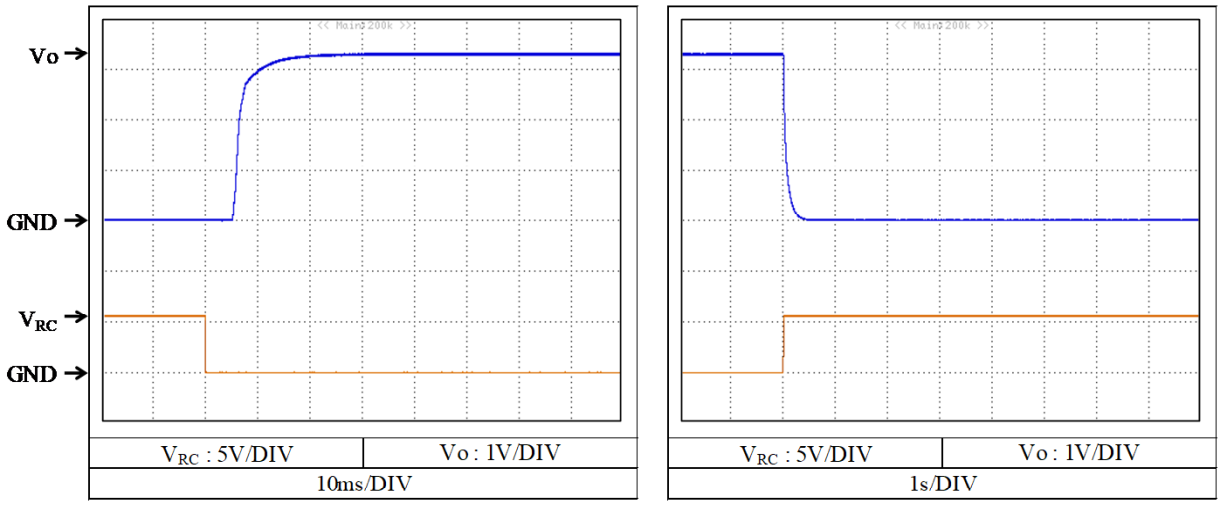


2-5. 出力立ち上がり・立ち下がり特性 (リモートON/OFFコントロール時)

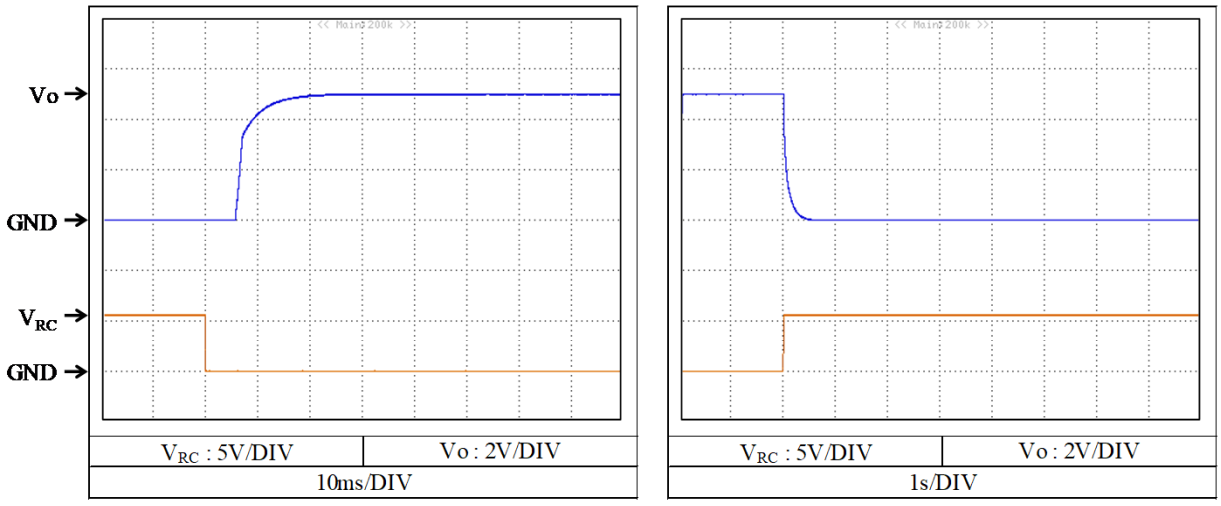
Output rise and fall characteristics with REMOTE ON/OFF CONTROL

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

3.3V



5V

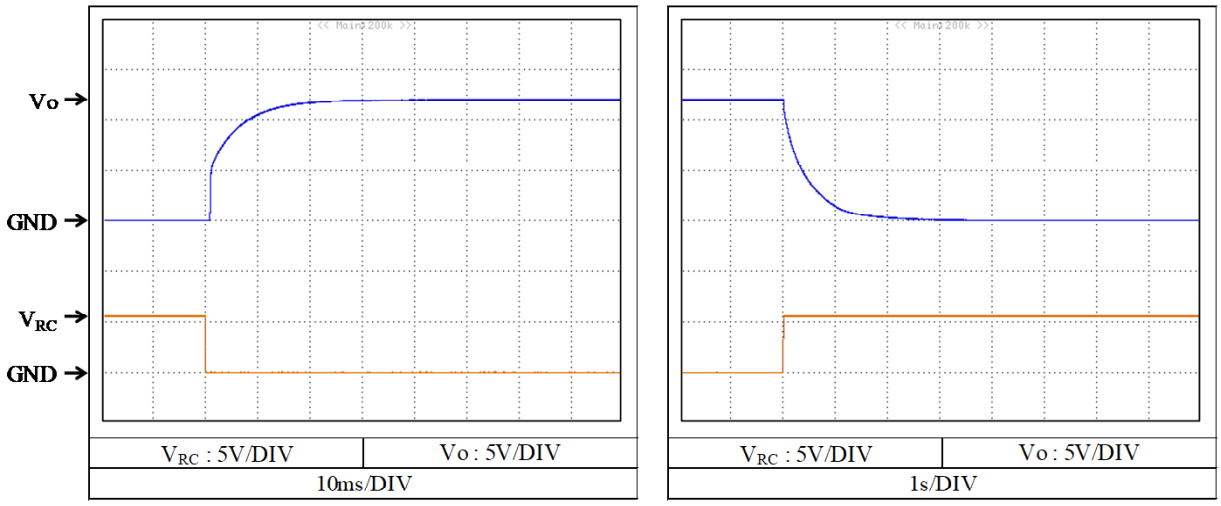


2-5. 出力立ち上がり・立ち下がり特性 (リモートON/OFFコントロール時)

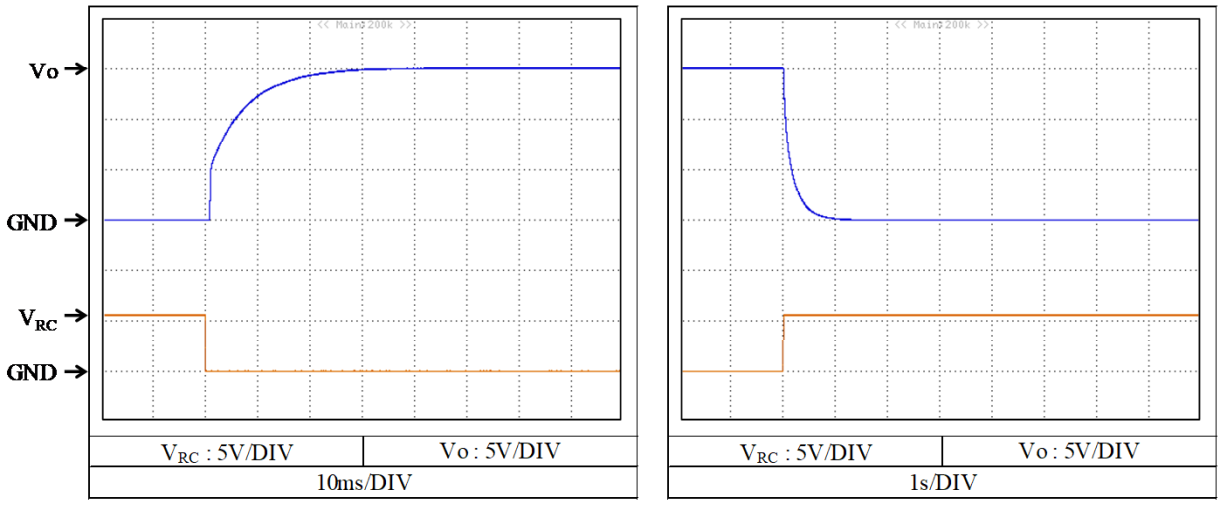
Output rise and fall characteristics with REMOTE ON/OFF CONTROL

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

12V



15V

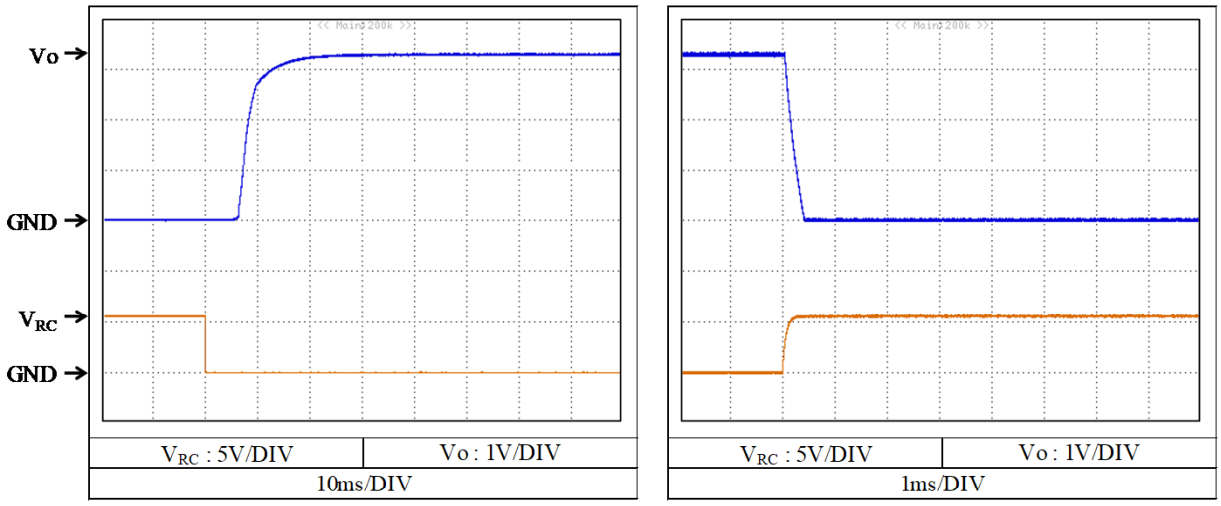


2-5. 出力立ち上がり・立ち下がり特性 (リモートON/OFFコントロール時)

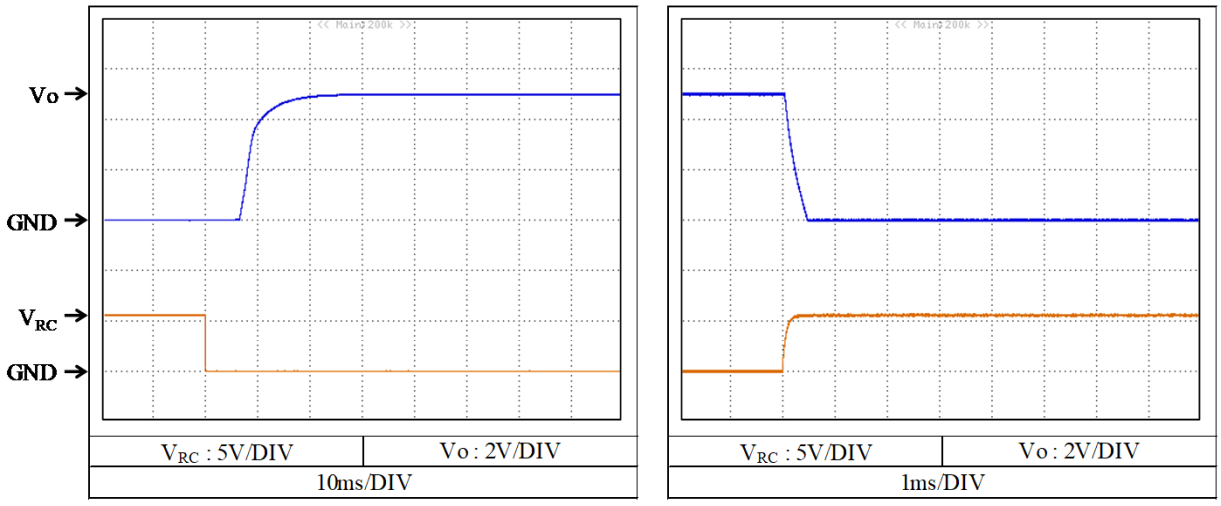
Output rise and fall characteristics with REMOTE ON/OFF CONTROL

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

3.3V



5V

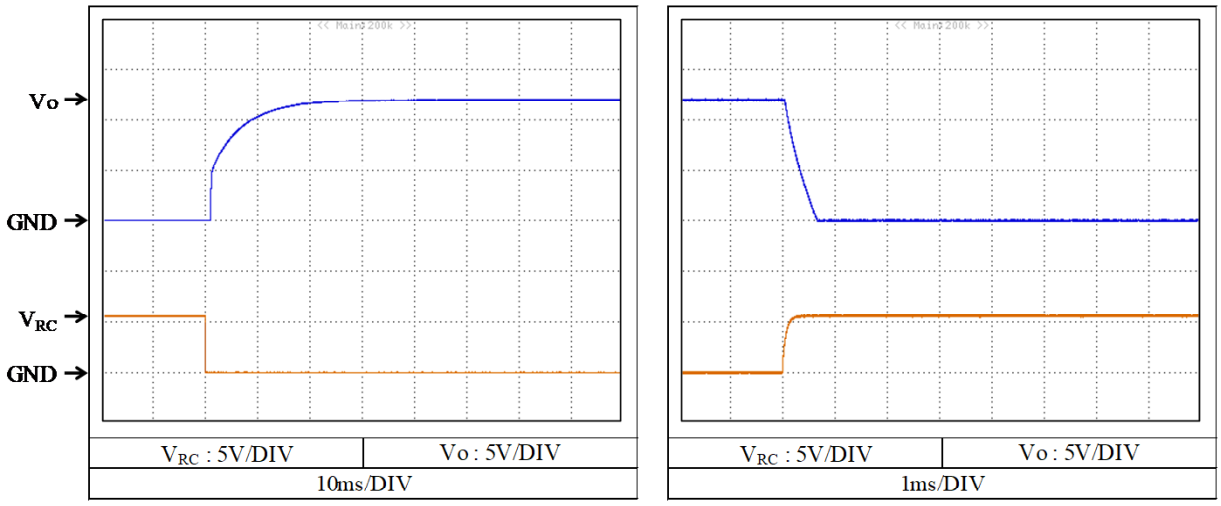


2-5. 出力立ち上がり・立ち下がり特性 (リモートON/OFFコントロール時)

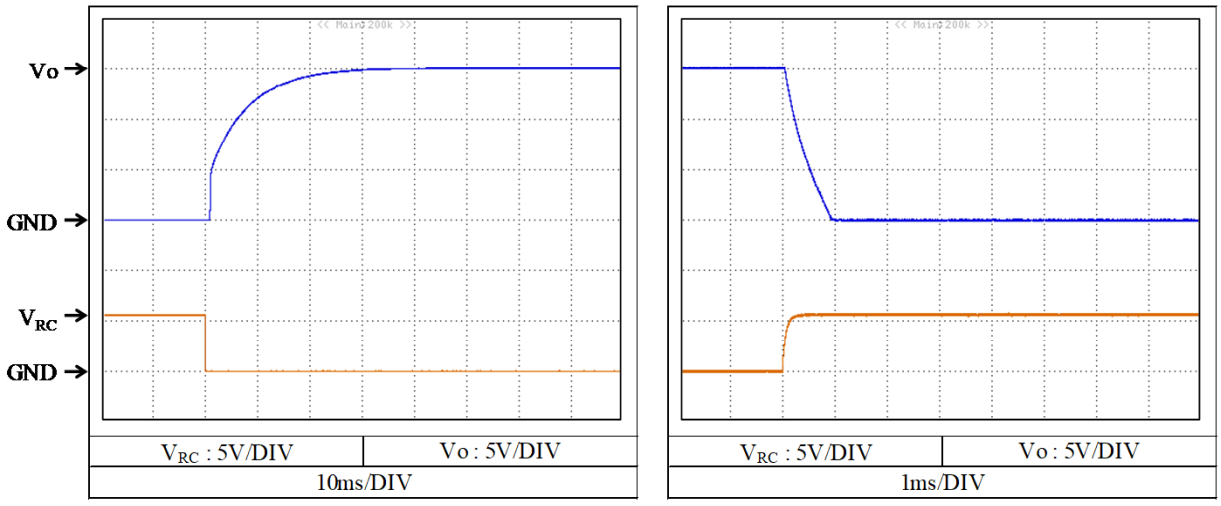
Output rise and fall characteristics with REMOTE ON/OFF CONTROL

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

12V



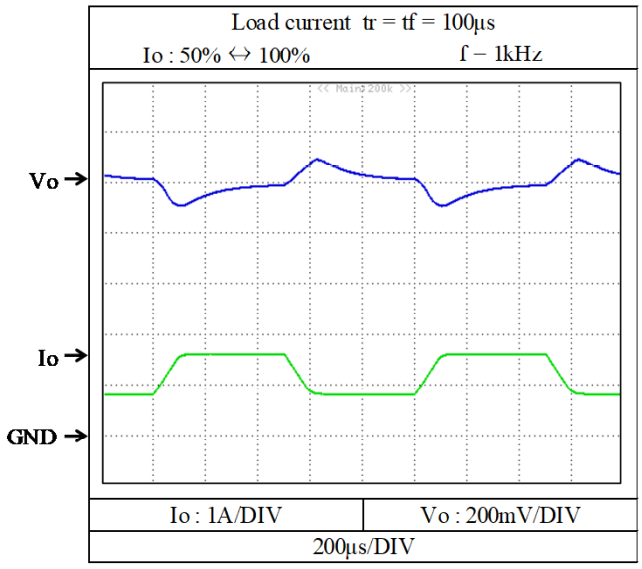
15V



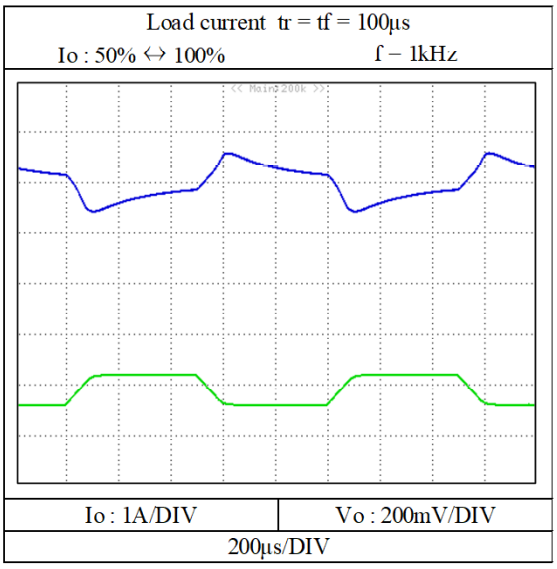
2-6. 過渡応答(負荷急変)特性 Dynamic load response characteristics

Conditions Vin : 48 VDC
Ta : 25 °C

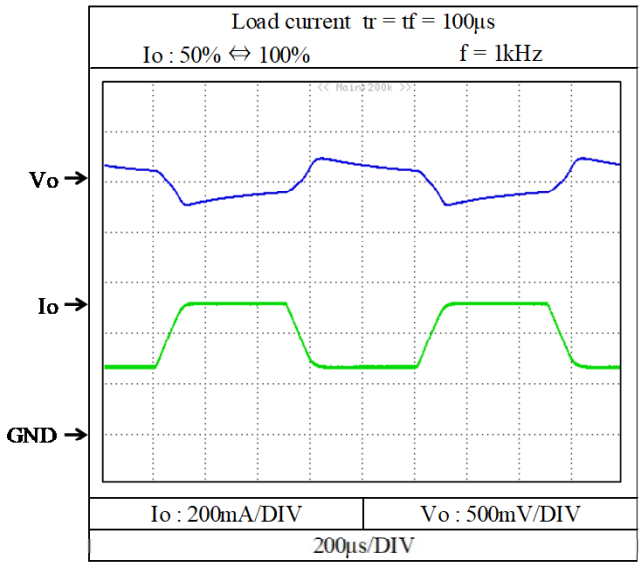
3.3V



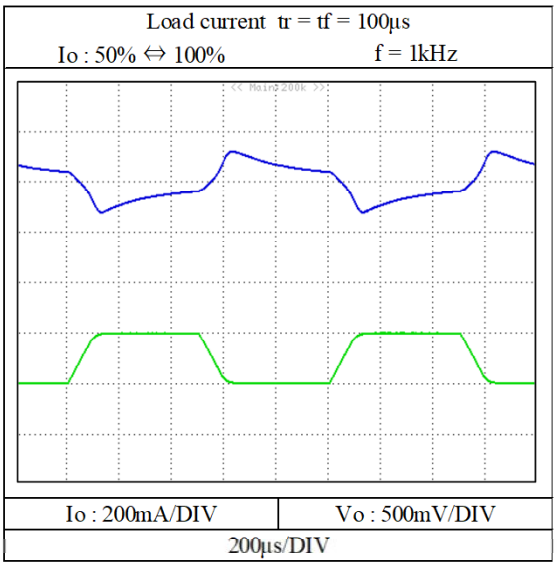
5V



12V



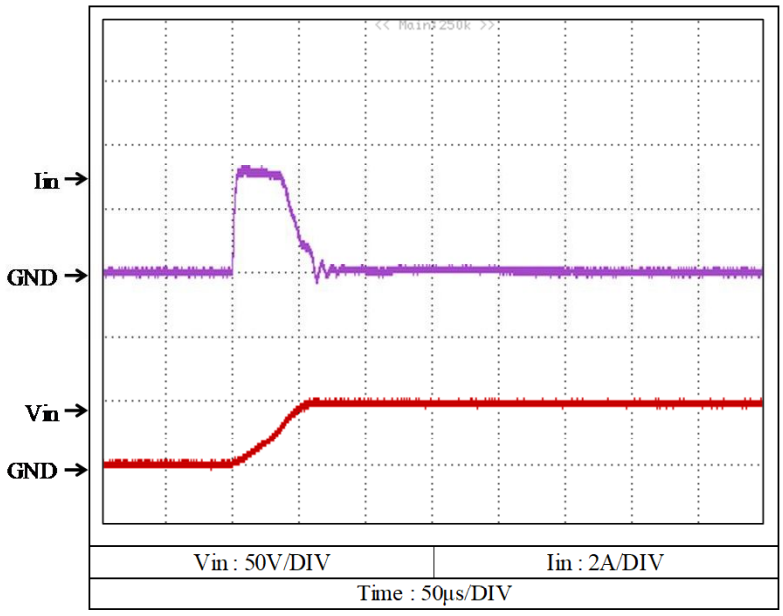
15V



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

CCG10-48-05S

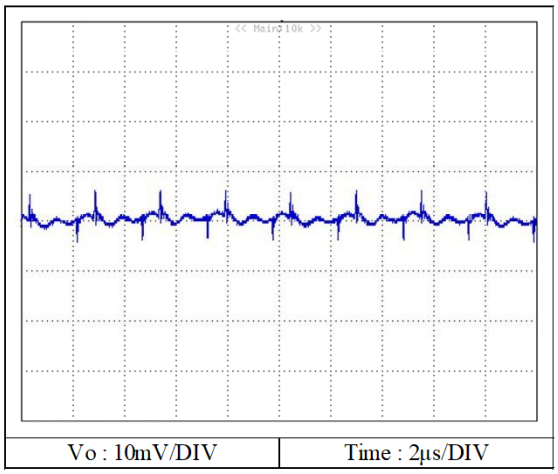


CCG6-48-xxSの入力サージ電流特性は CCG10-48-05S と同等です。
CCG6-48-xxS have the same Inrush current characteristics as CCG10-48-05S data.

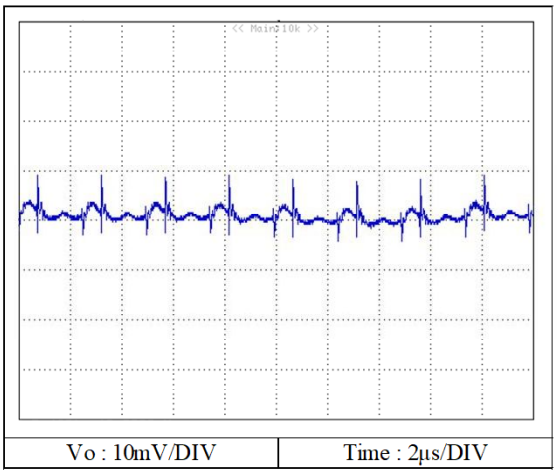
2-8. 出力リップルノイズ波形 Output ripple and noise waveform

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

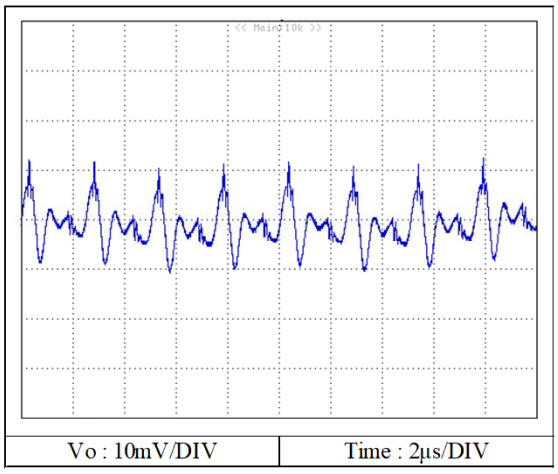
3.3V



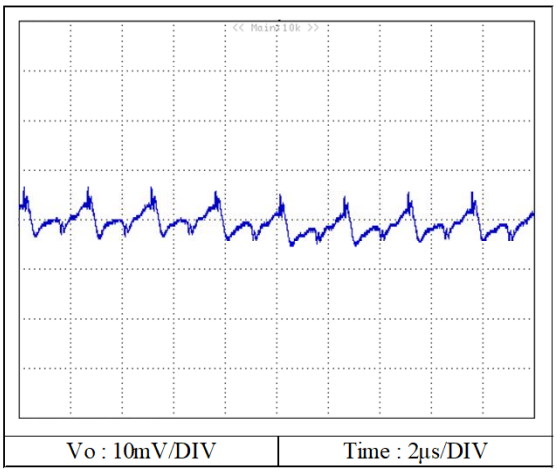
5V



12V



15V

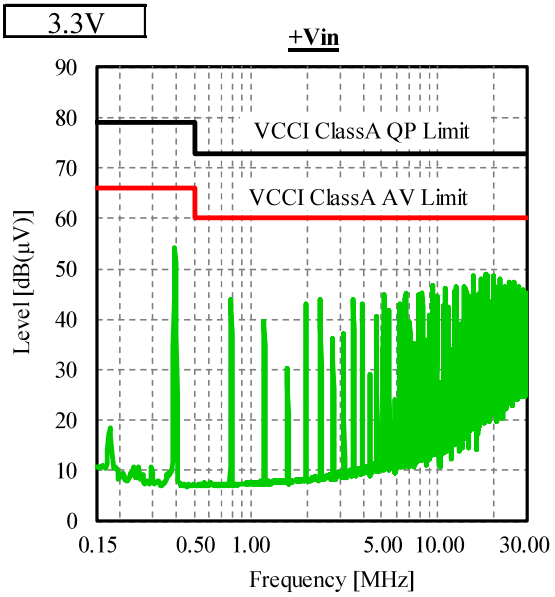


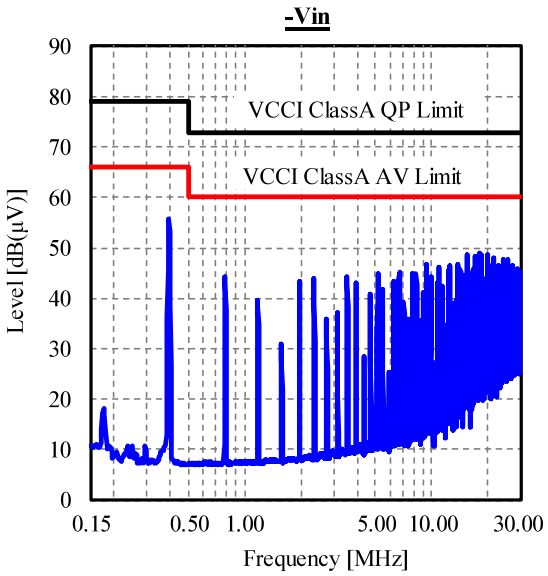
2-9. EMI特性 Electro-Magnetic Interference characteristics

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

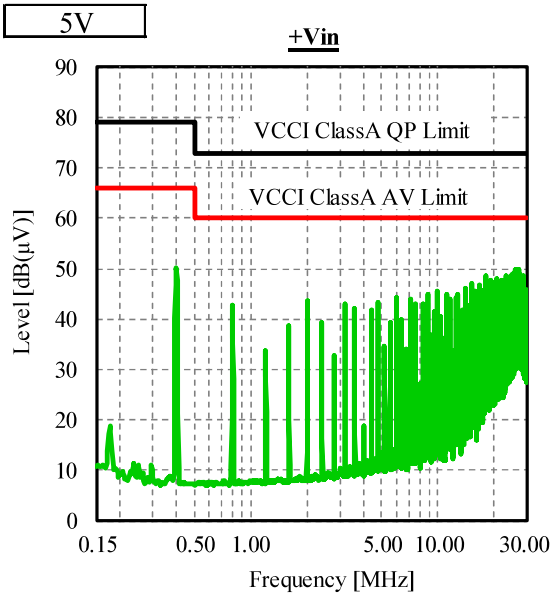
Conditions Vin : 48 VDC
Io : 100 %
Ta : 25 °C

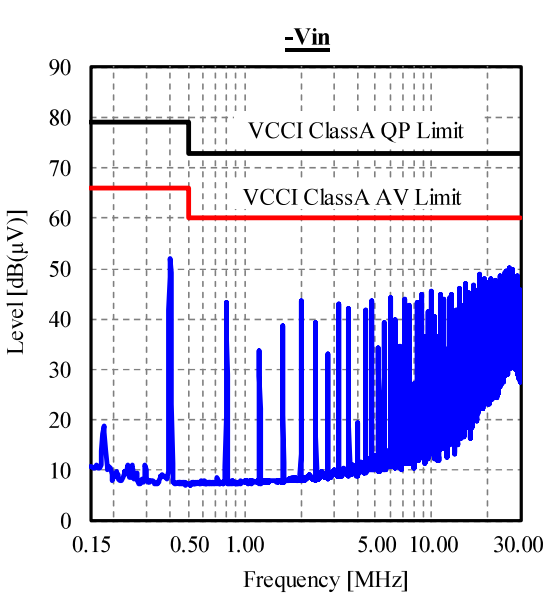
3.3V





5V





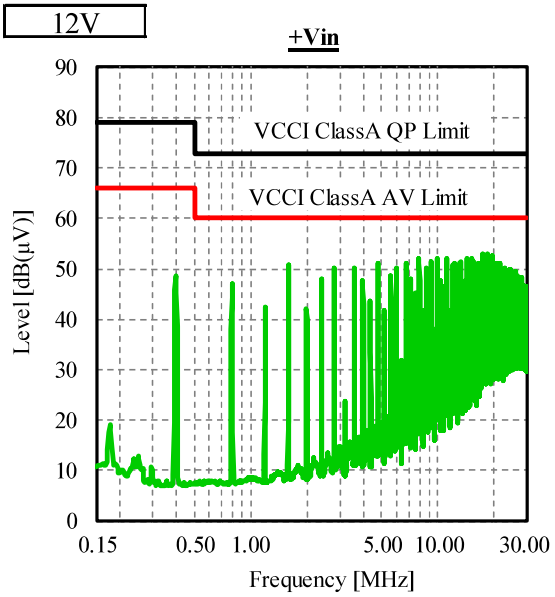
表示はQP値
Indication is QP values.

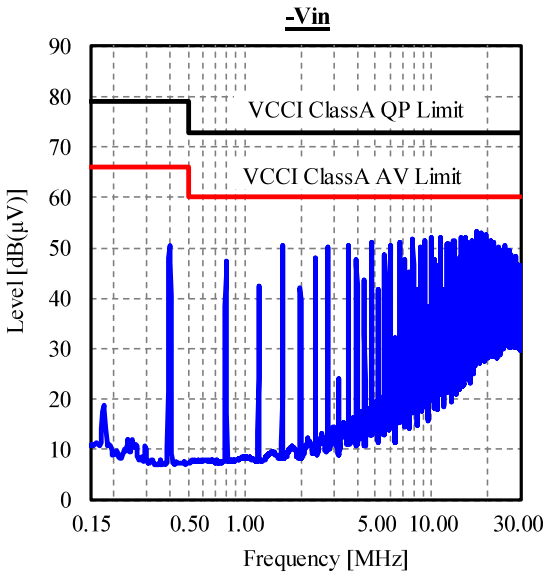
2-9. EMI特性 Electro-Magnetic Interference characteristics

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

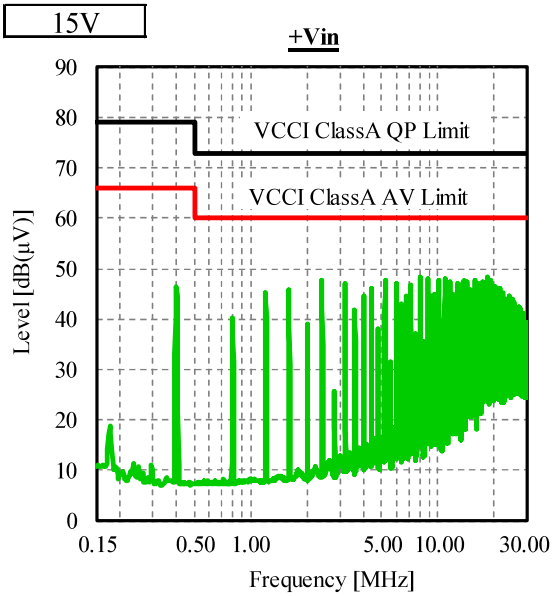
Conditions Vin : 48 VDC
Io : 100 %
Ta : 25 °C

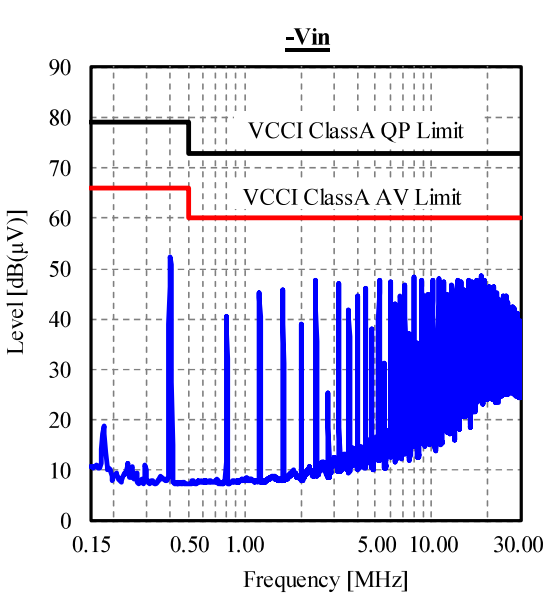
12V





15V





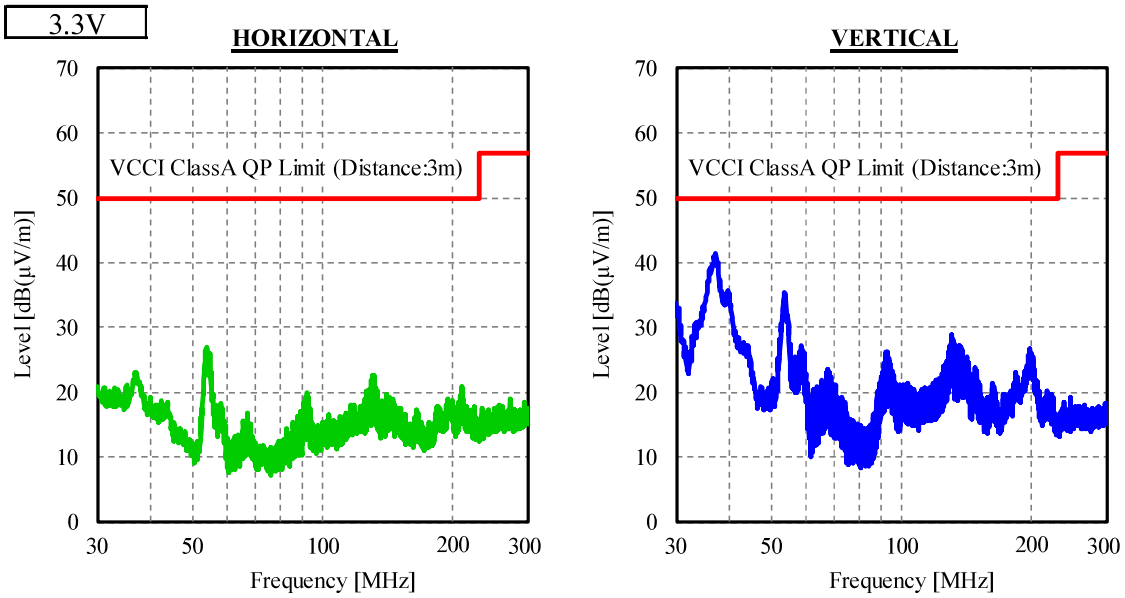
表示はQP値
Indication is QP values.

2-9. EMI特性 Electro-Magnetic Interference characteristics

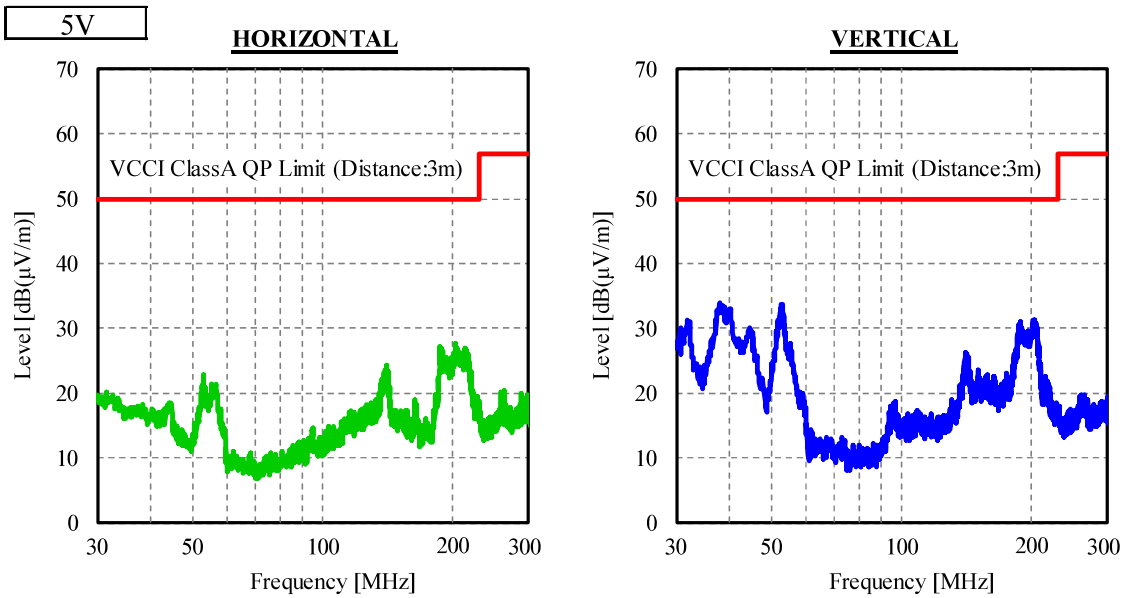
(b) 雑音電界強度 (輻射ノイズ) Radiated Emission Noise

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

3.3V



5V



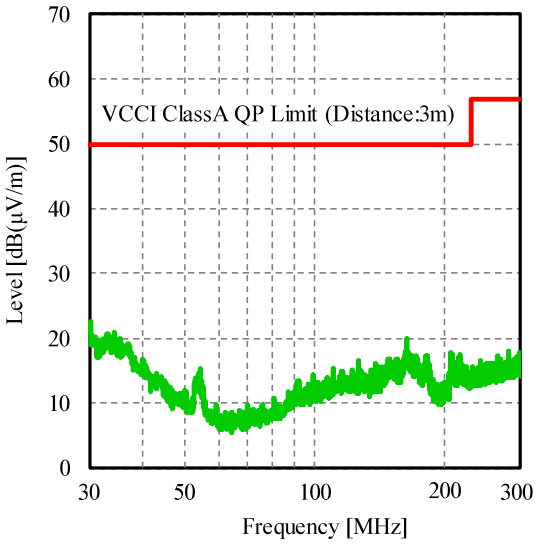
表示はピーク値
Indication is peak values.

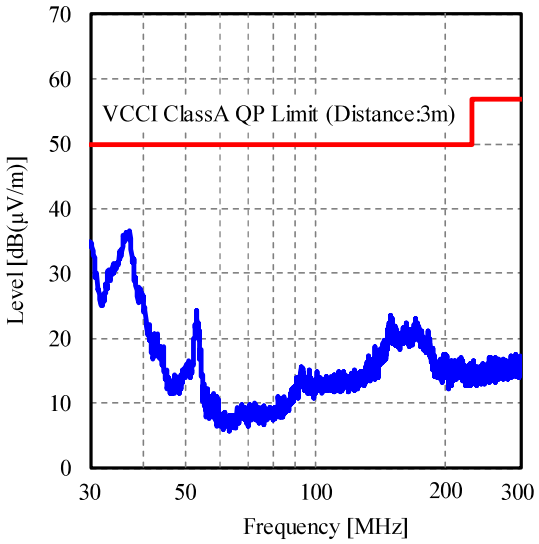
2-9. EMI特性 Electro-Magnetic Interference characteristics

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

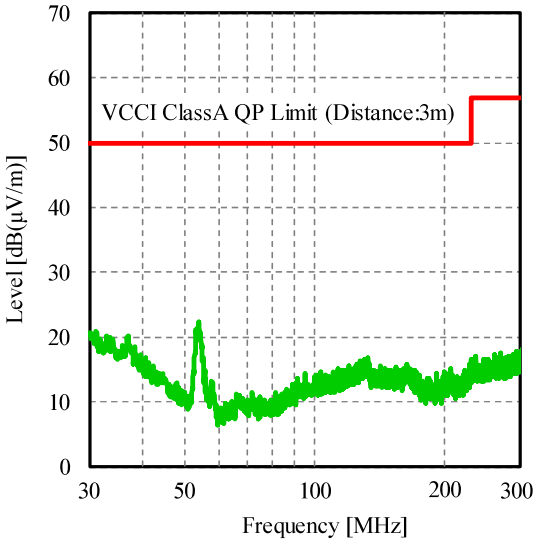
Conditions Vin : 48 VDC
Io : 100 %
Ta : 25 °C

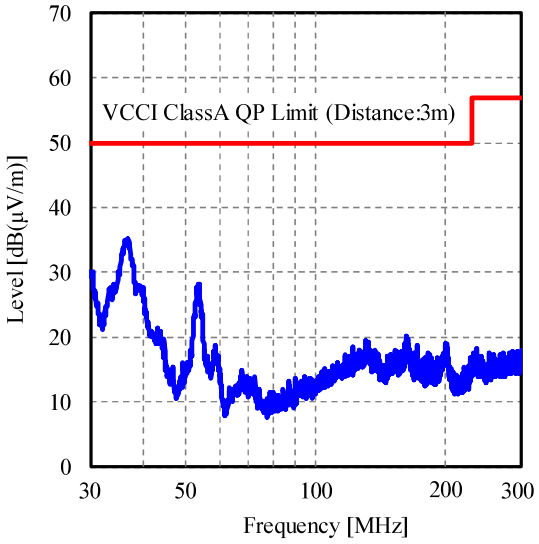
12V





15V





表示はピーク値
Indication is peak values.