ZWP350-1000

EVALUATION DATA

型式データ

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2. 特性データ Characteristics

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使用記号 Terminology used

		定義 Definition	
Vin	‥‥‥	入力電圧	Input voltage
Vout	‥‥‥	出力電圧	Output voltage
Iin	‥‥‥	入力電流	Input current
Iout	‥‥‥	出力電流	Output current
Ta	‥‥‥	周囲温度	Ambient temperature
f	‥‥‥	周波数	Frequency
Vstb	‥‥‥	STB出力電圧	STB output voltage
Istb	‥‥‥	STB出力電流	STB output current

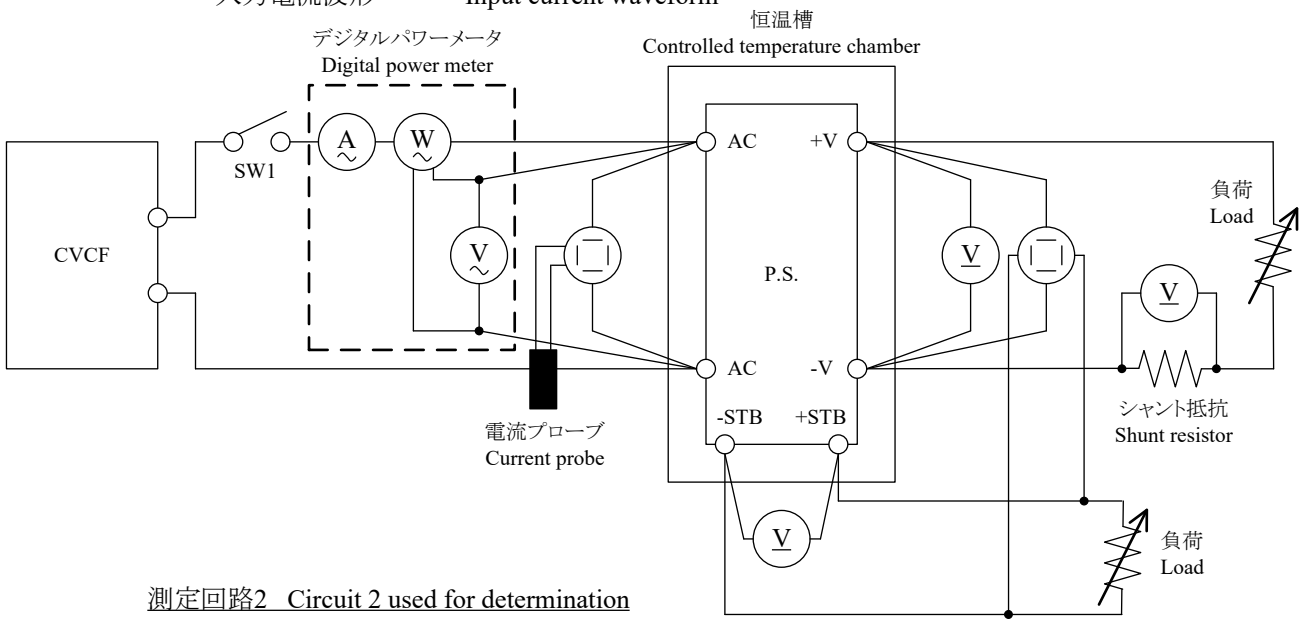
※ 当社測定条件における結果であり、参考値としてお考え願います。
Test results are reference data based on our measurement condition.

1. 測定方法 Evaluation Method

1-1. 測定回路 Circuit used for determination

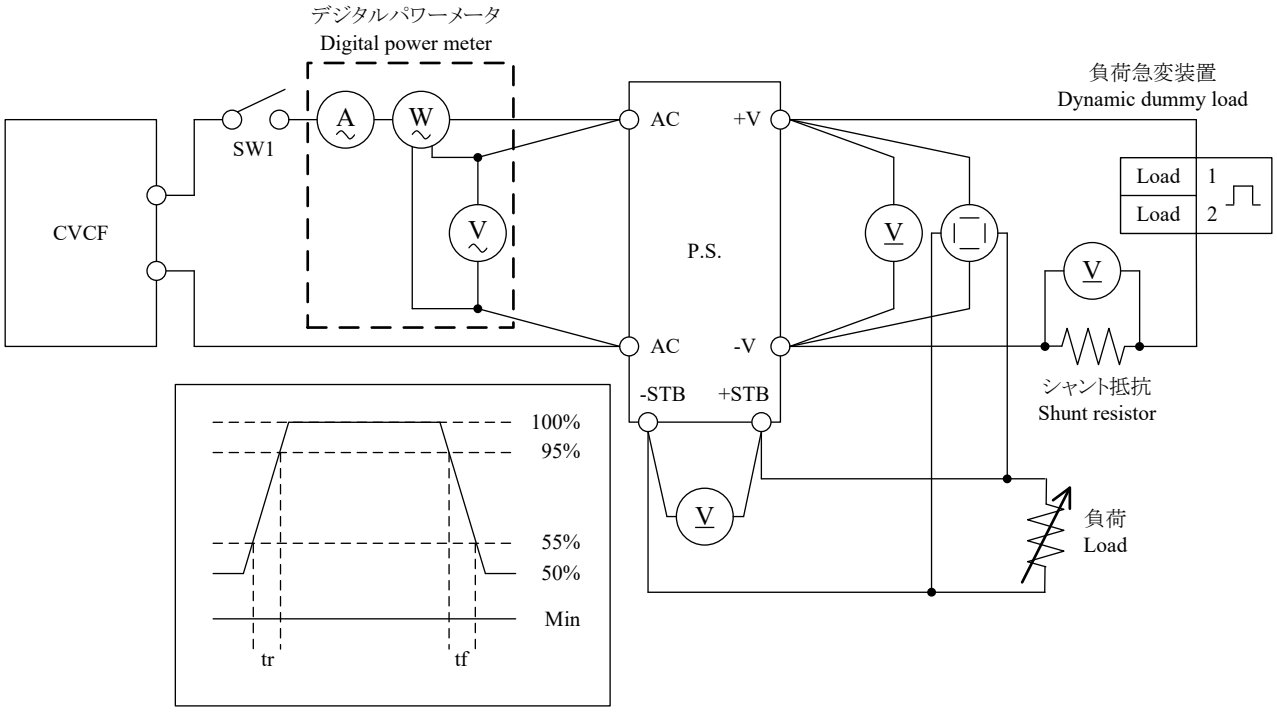
測定回路1 Circuit 1 used for determination

- 静特性 Steady state data
- 通電ドリフト特性 Warm up voltage drift characteristics
- 出力保持時間特性 Hold up time characteristics
- 出力立ち上がり特性 Output rise characteristics
- 出力立ち下がり特性 Output fall characteristics
- 過電流保護特性 Over current protection (OCP) characteristics
- 過電圧保護特性 Over voltage protection (OVP) characteristics
- 入力電圧瞬停特性 Response to brown out characteristics
- 入力電流波形 Input current waveform



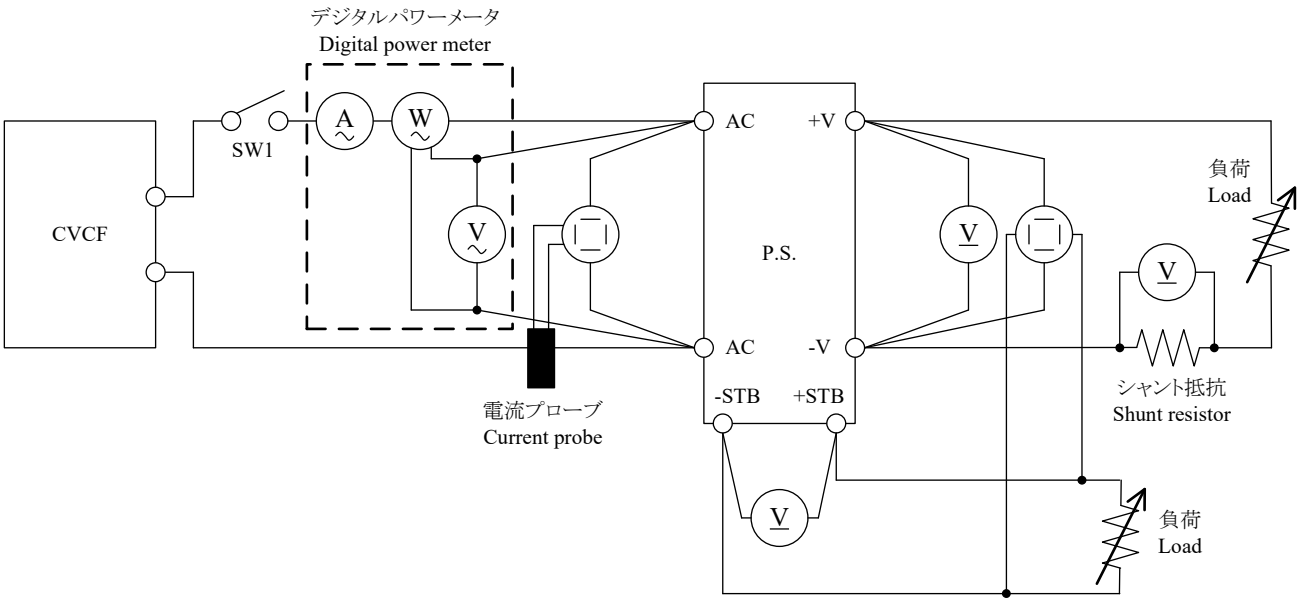
測定回路2 Circuit 2 used for determination

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



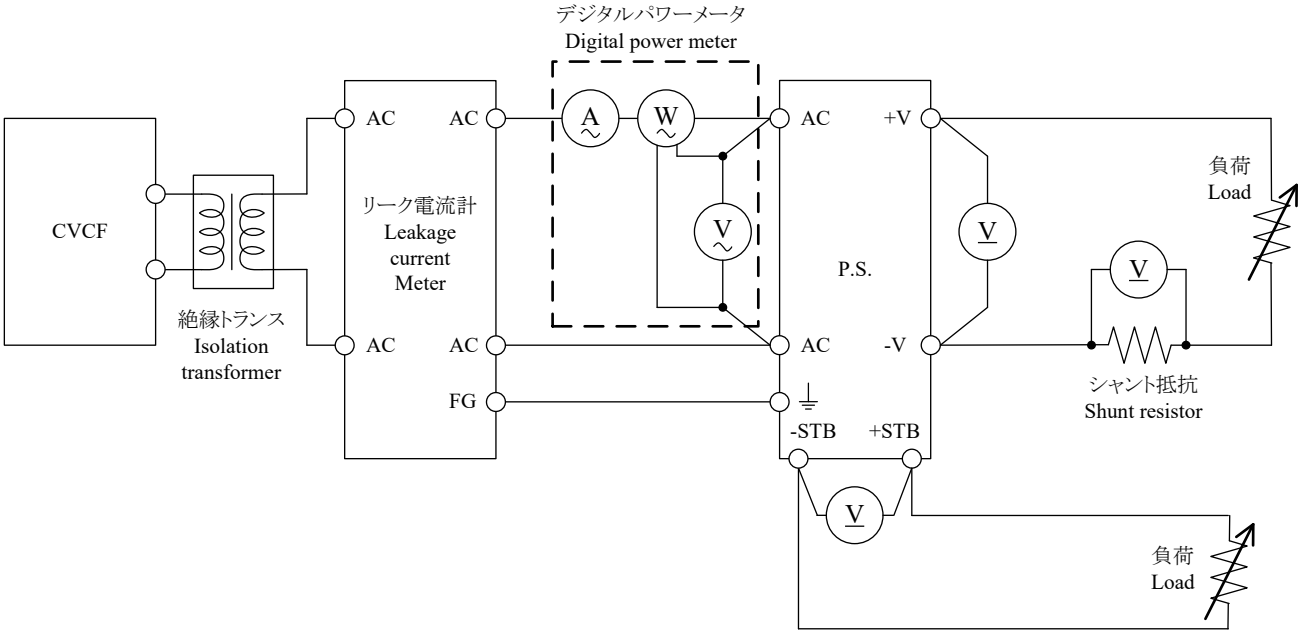
測定回路3　Circuit 3 used for determination

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



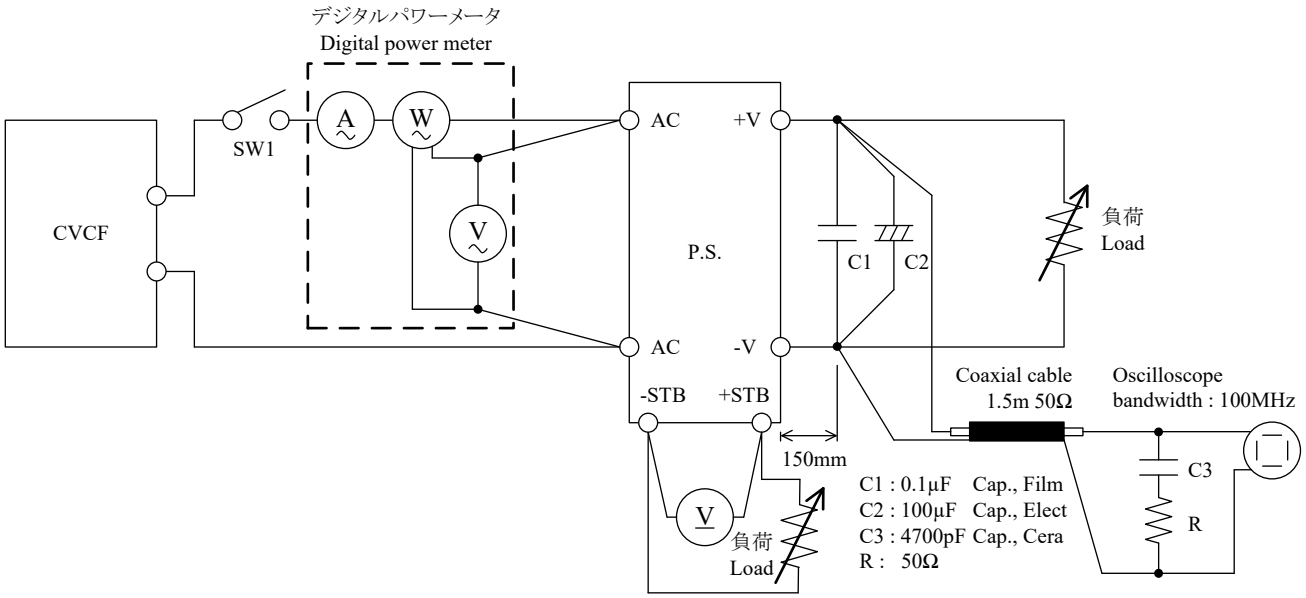
測定回路4　Circuit 4 used for determination

- リーク電流特性　Leakage current characteristics



測定回路5　Circuit 5 used for determination

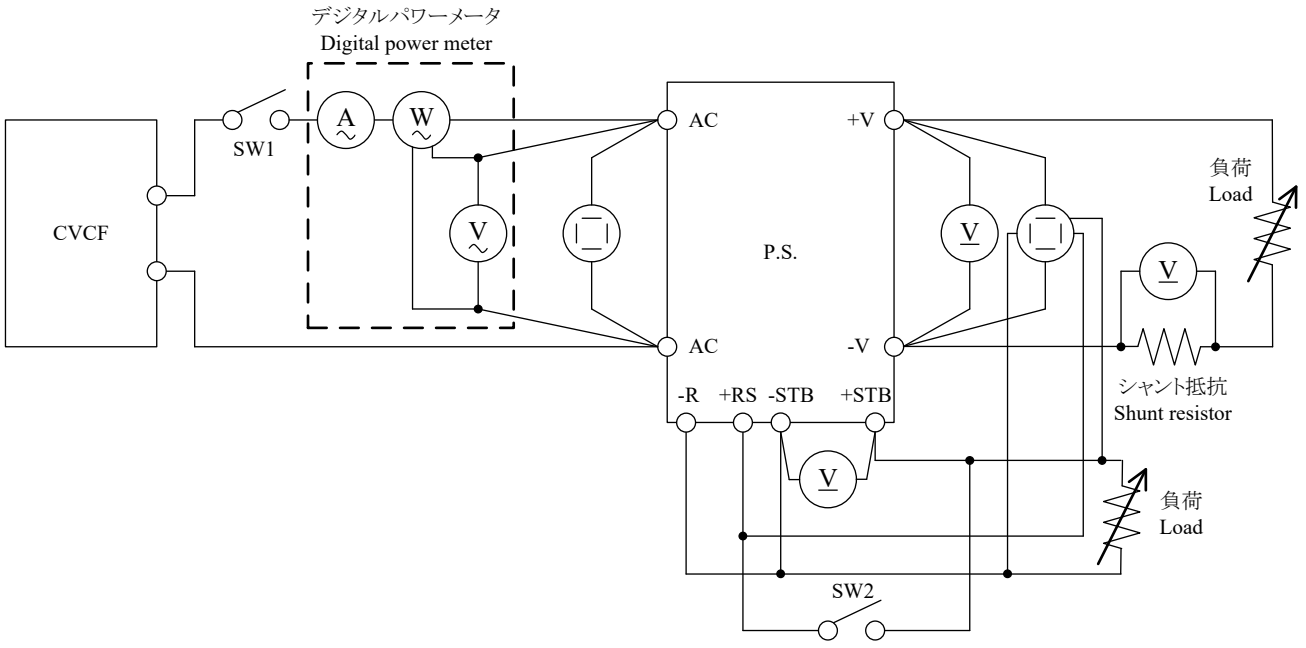
- 出力リップル、ノイズ波形　Output ripple and noise waveform



測定回路6　Circuit 6 used for determination

- オン・オフコントロール時出力立ち上がり、立下がり特性

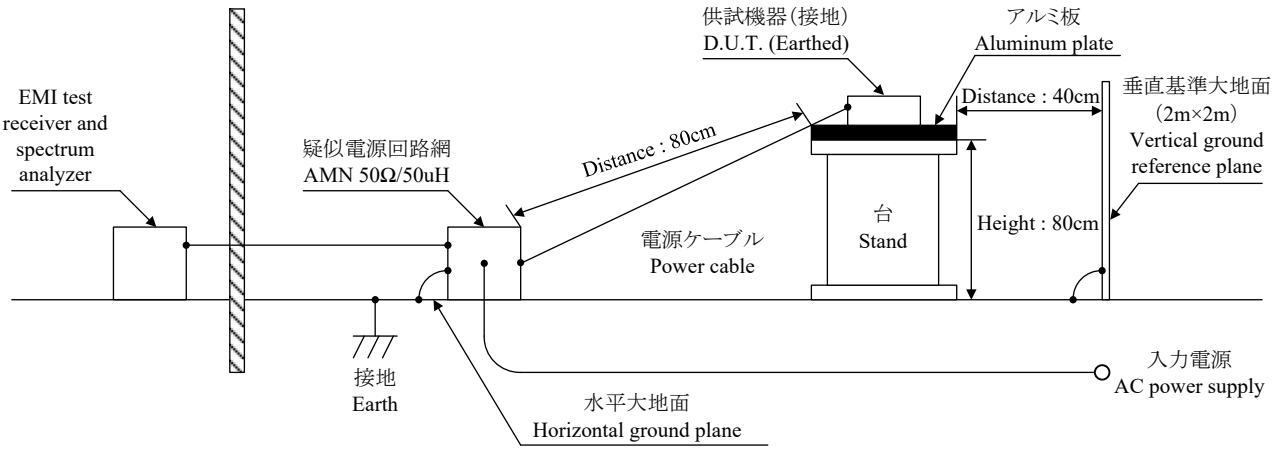
  Output rise and fall characteristics with ON/OFF Control



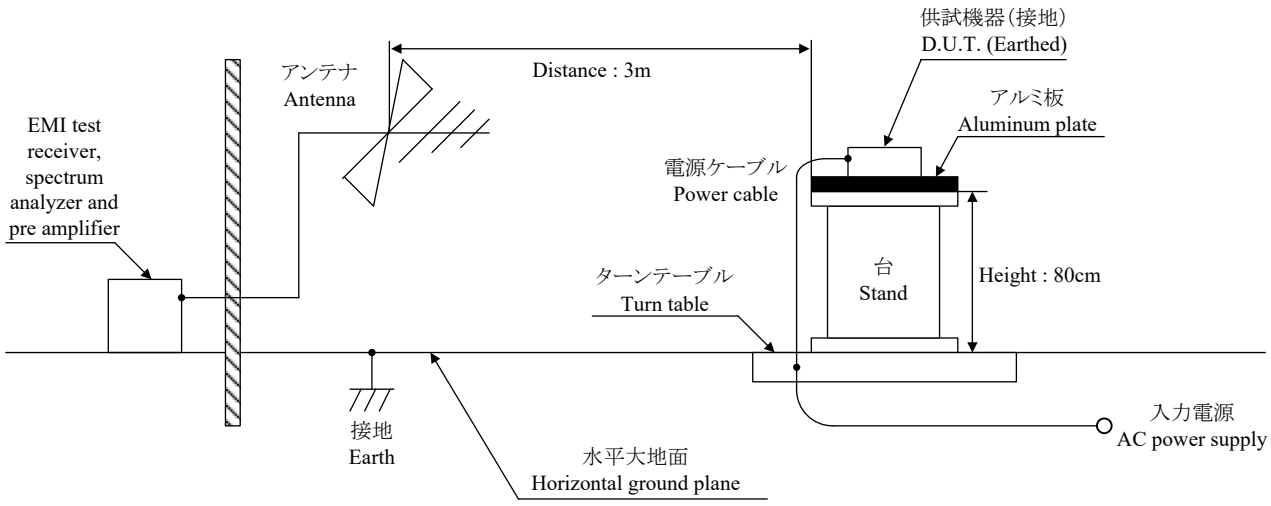
測定構成　Configuration used for determination

- EMI特性　Electro-Magnetic Interference characteristics

(a) 雑音端子電圧（帰還ノイズ）　Conducted Emission



(b) 雑音電界強度（放射ノイズ）　Radiated Emission



1-2. 使用測定機器 List of equipment used

	EQUIPMENT USED	MANUFACTURE	MODEL NO.
1	DIGITAL STORAGE OSCILLOSCOPE	YOKOGAWA ELECT.	DLM2054
2	DIGITAL STORAGE OSCILLOSCOPE	YOKOGAWA ELECT.	DL1740E
3	DIGITAL MULTIMETER	AGILENT	34970A
4	DIGITAL POWER METER	YOKOGAWA ELECT.	WT310E / WT210
5	DIGITAL POWER METER	HIOKI	3333 / PW3337
6	CURRENT PROBE	YOKOGAWA ELECT.	701933 / 701931
7	DYNAMIC DUMMY LOAD	CHROMA	63112A
8	DUMMY LOAD	CHROMA	63106A / 63108A
9	DUMMY LOAD	KIKUSUI	PLZ1205W
10	SLIDE REGULATOR	VOLTAC	SB-102 / 50384
11	CVCF	KIKUSUI	PCR4000LE
12	CVCF	KIKUSUI	PCR12000WE2R
13	CVCF	CHROMA	6520 / 61505
14	CVCF	AGILENT	6813B
15	SHUNT RESISTOR	YOKOGAWA ELECT.	2215
16	LEAKAGE CURRENT METER	SIMPSON	228
17	CONTROLLED TEMP. CHAMBER	ESPEC	SH-662 / SU-241
18	EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI
19	EMI TEST SPECTRUM ANALYZER	ROHDE&SCHWARZ	ESCI
20	PRE AMP	SONOMA	310
21	LISN	TOYO TECNICA	NNLK8121
22	ANTENNA	ROHDE&SCHWARZ	CBL6111D
23	DUMMY LOAD	PCN	RHF250 SERIES

1-3. 評価負荷条件 Load condition

自然空冷 Convection cooling

Vin	Iout	24V	30V	36V	48V
90VAC - 265VAC	100%	14.6A	11.65A	9.7A	7.3A

強制空冷 Forced air cooling

Vin	Iout	24V	30V	36V	48V
90VAC - 265VAC	143%	20.8A	16.6A	13.8A	10.4A

* Vstb=5V, Istb=0.3A (100%)

2. 特性データ Characteristics

2-1. 静特性 Steady state data

(1) 入力・負荷・温度変動、出力起動・遮断電圧

Line and load regulation, Temperature drift, Start up voltage and Drop out voltage

条件 Istb : 0%
Condition 空冷方式 : 強制空冷
Cooling : Forced air cooling

24V

1. 入力・負荷変動 Line and load regulation　　Condition　　Ta : 25℃

Iout / Vin	90VAC	100VAC	200VAC	265VAC	Line regulation	
0%	24.014V	24.002V	24.014V	24.016V	14mV	0.058%
50%	24.006V	24.006V	24.004V	24.006V	2mV	0.008%
100%	24.011V	24.010V	24.012V	24.013V	3mV	0.013%
143%	24.013V	24.012V	24.014V	24.015V	3mV	0.013%
Load	8mV	10mV	10mV	10mV		
regulation	0.033%	0.042%	0.042%	0.042%		

2. 温度変動 Temperature drift　　Condition　　Vin : 100VAC
Iout : 100%

Ta	-20℃	+25℃	+50℃	Temperature stability	
Vout	24.056V	24.010V	23.987V	69mV	0.288%

3. 出力起動・遮断電圧 Start up voltage and Shut down voltage　　Condition　　Ta : 25℃
Iout : 100%

Start up voltage (Vin)	77VAC
Shut down voltage (Vin)	66VAC

30V

1. 入力・負荷変動 Line and load regulation　　Condition　　Ta : 25℃

Iout / Vin	90VAC	100VAC	200VAC	265VAC	Line regulation	
0%	29.977V	29.993V	29.992V	29.994V	17mV	0.057%
50%	30.006V	30.006V	30.006V	30.005V	1mV	0.003%
100%	30.013V	30.013V	30.013V	30.014V	1mV	0.003%
143%	30.014V	30.014V	30.016V	30.015V	2mV	0.007%
Load	37mV	21mV	24mV	21mV		
regulation	0.123%	0.070%	0.080%	0.070%		

2. 温度変動 Temperature drift　　Condition　　Vin : 100VAC
Iout : 100%

Ta	-20℃	+25℃	-50℃	Temperature stability	
Vout	30.047V	30.013V	29.966V	81mV	0.270%

3. 出力起動・遮断電圧 Start up voltage and Shut down voltage　　Condition　　Ta : 25℃
Iout : 100%

Start up voltage (Vin)	77VAC
Shut down voltage (Vin)	66VAC

2. 特性データ Characteristics

2-1. 静特性 Steady state data

(1) 入力・負荷・温度変動、出力起動・遮断電圧

Line and load regulation, Temperature drift, Start up voltage and Drop out voltage

条件 Istb : 0%
Condition 空冷方式 : 強制空冷
Cooling : Forced air cooling

36V

1. 入力・負荷変動 Line and load regulation　　Condition　Ta : 25℃

Iout / Vin	90VAC	100VAC	200VAC	265VAC	Line regulation	
0%	35.995V	36.002V	35.996V	36.002V	7mV	0.019%
50%	36.000V	36.000V	36.002V	36.002V	2mV	0.006%
100%	36.006V	36.005V	36.008V	36.007V	3mV	0.008%
143%	36.011V	36.010V	36.013V	36.013V	3mV	0.008%
Load	16mV	10mV	17mV	11mV		
regulation	0.044%	0.028%	0.047%	0.031%		

2. 温度変動 Temperature drift　　Condition　Vin : 100VAC
Iout : 100%

Ta	-20℃	+25℃	-50℃	Temperature stability	
Vout	36.017V	36.005V	35.989V	28mV	0.078%

3. 出力起動・遮断電圧 Start up voltage and Shut down voltage　　Condition　Ta : 25℃
Iout : 100%

Start up voltage (Vin)	77VAC
Shut down voltage (Vin)	66VAC

48V

1. 入力・負荷変動 Line and load regulation　　Condition　Ta : 25℃

Iout / Vin	90VAC	100VAC	200VAC	265VAC	Line regulation	
0%	48.001V	48.006V	48.001V	48.003V	5mV	0.010%
50%	48.004V	48.005V	48.005V	48.003V	2mV	0.004%
100%	48.008V	48.010V	48.009V	48.007V	3mV	0.006%
143%	48.014V	48.015V	48.014V	48.012V	3mV	0.006%
Load	13mV	10mV	13mV	9mV		
regulation	0.027%	0.021%	0.027%	0.019%		

2. 温度変動 Temperature drift　　Condition　Vin : 100VAC
Iout : 100%

Ta	-20℃	+25℃	-50℃	Temperature stability	
Vout	47.936V	48.010V	47.986V	74mV	0.154%

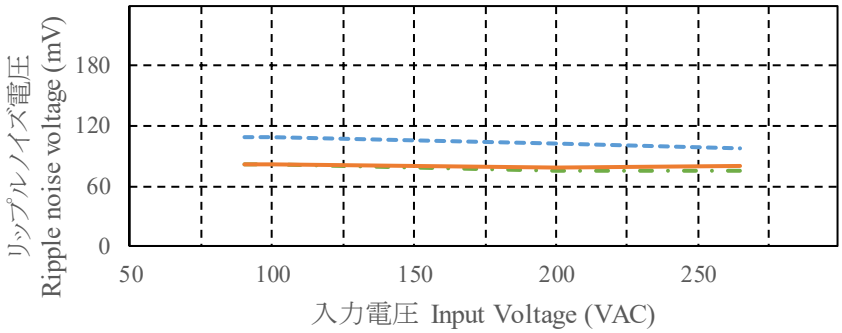
3. 出力起動・遮断電圧 Start up voltage and Shut down voltage　　Condition　Ta : 25℃
Iout : 100%

Start up voltage (Vin)	77VAC
Shut down voltage (Vin)	66VAC

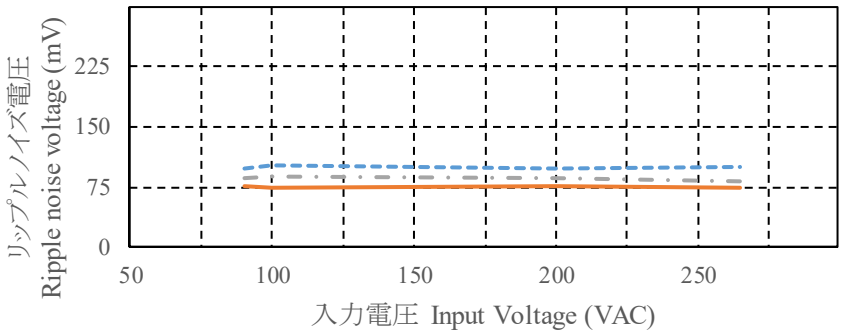
(2) リップルノイズ電圧対入力電圧　Ripple noise voltage vs. Input voltage

条件　Iout : 100%
Condition　Istb : 100%
空冷方式 : 自然空冷
Cooling : Convection cooling
Ta : -20℃
+25℃
+50℃

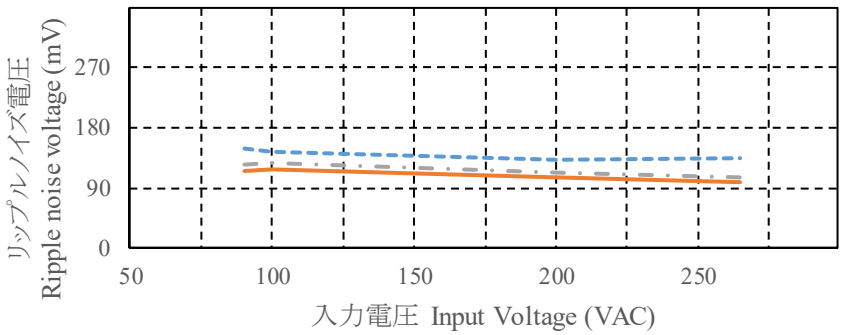
24V



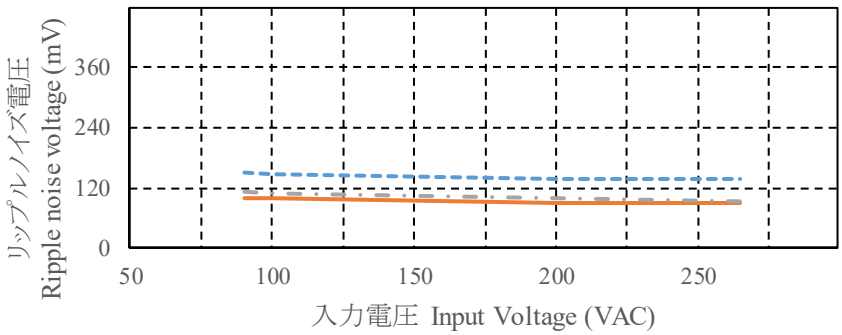
30V



36V



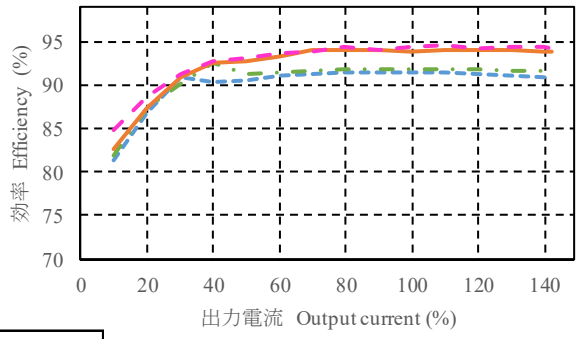
48V

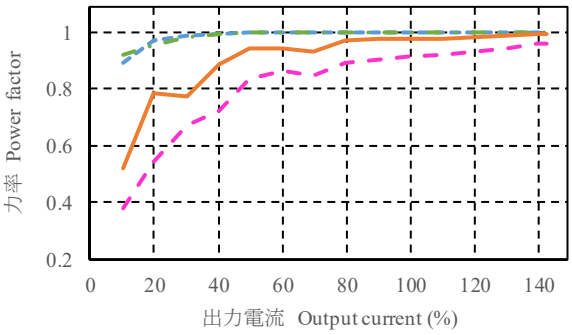


(3) 効率･力率対出力電流　Efficiency and Power factor vs. Output current

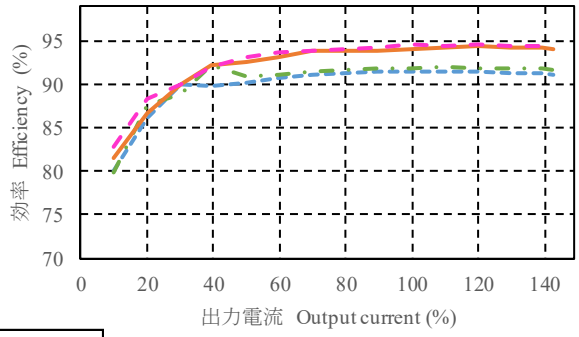
条件 Condition
Vin : 90VAC
100VAC
200VAC
265VAC
Istb : 0%
空冷方式 : 強制空冷
Cooling : Forced air cooling
Ta : 25℃

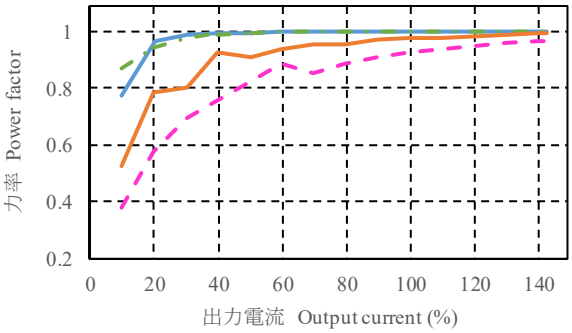
24V



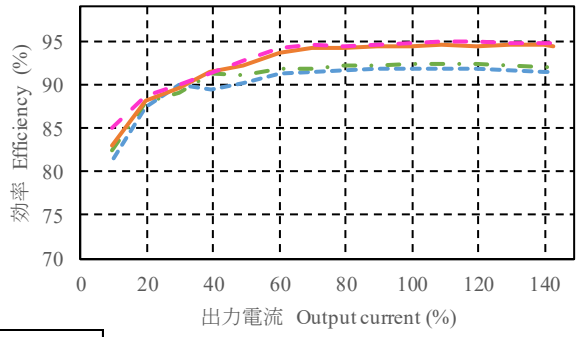


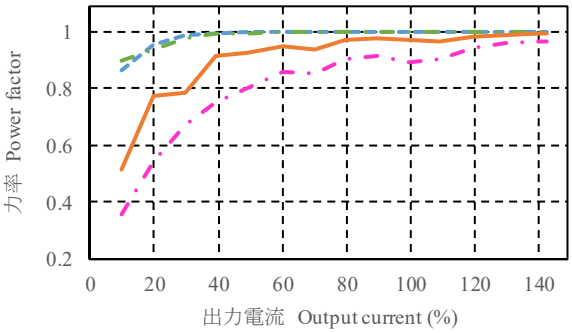
30V



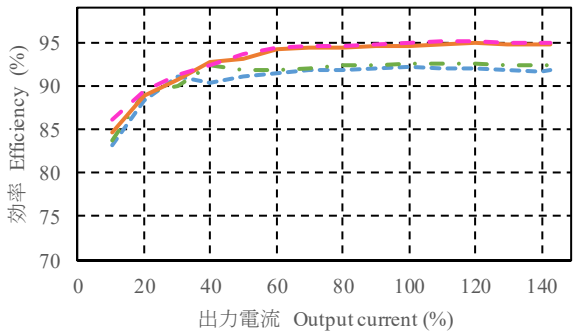


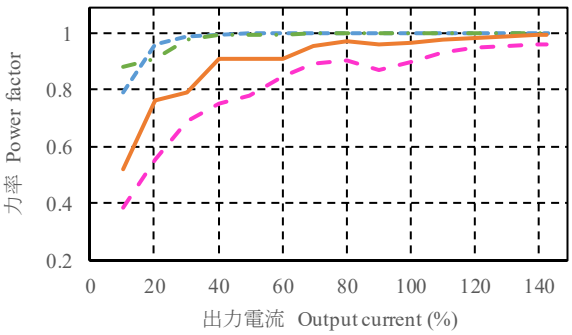
36V





48V



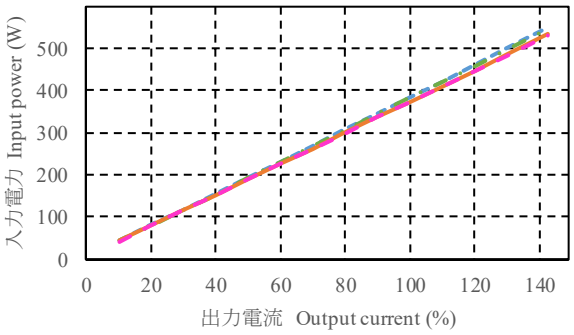


(4) 入力電力対出力電流　Input power vs. Output current

条件 Condition
Vin : 90VAC
100VAC
200VAC
265VAC
Istb : 0%
空冷方式 : 強制空冷
Cooling : Forced air cooling
Ta : 25℃

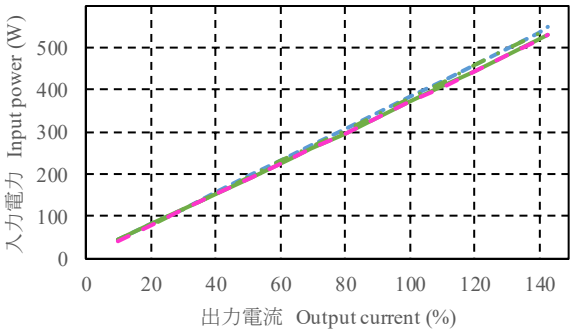
24V

入力電圧 Input Voltage	入力電力 Input Power	
	Iout : 0%	コントロールオフ Control OFF
90VAC	1.8W	0.6W
100VAC	1.6W	0.6W
200VAC	1.4W	0.8W
265VAC	1.4W	1.1W



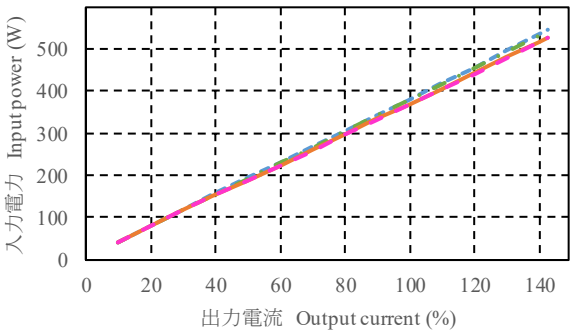
30V

入力電圧 Input Voltage	入力電力 Input Power	
	Iout : 0%	コントロールオフ Control OFF
90VAC	3.3W	0.6W
100VAC	3.4W	0.6W
200VAC	2.6W	0.8W
265VAC	2.4W	1.0W



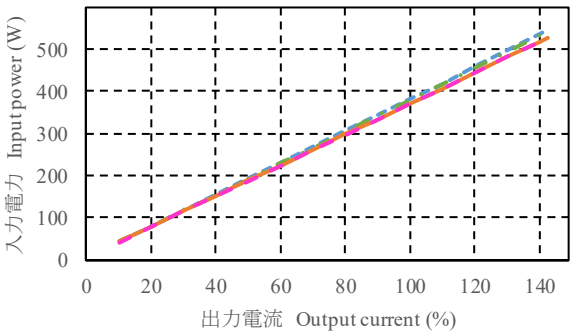
36V

入力電圧 Input Voltage	入力電力 Input Power	
	Iout : 0%	コントロールオフ Control OFF
90VAC	2.1W	0.6W
100VAC	2.0W	0.6W
200VAC	1.6W	0.8W
265VAC	1.6W	1.0W



48V

入力電圧 Input Voltage	入力電力 Input Power	
	Iout : 0%	コントロールオフ Control OFF
90VAC	2.3W	0.6W
100VAC	2.1W	0.6W
200VAC	1.6W	0.8W
265VAC	1.6W	1.1W

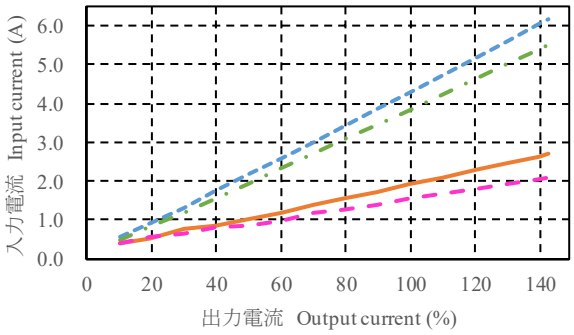


(5) 入力電流対出力電流　Input current vs. Output current

条件 Condition
Vin : 90VAC
100VAC
200VAC
265VAC
Istb : 0%
空冷方式 : 強制空冷
Cooling : Forced air cooling
Ta : 25℃

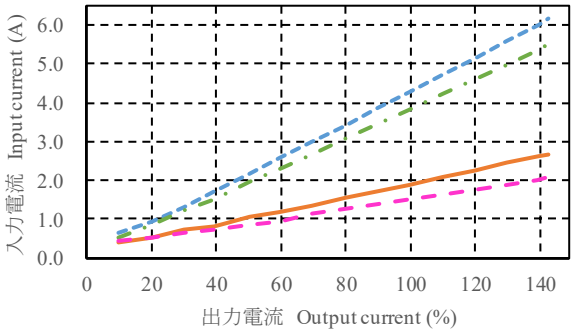
24V

入力電圧 Input Voltage	入力電流 Input Current	
	Iout : 0%	コントロールオフ Control OFF
90VAC	0.09A	0.01A
100VAC	0.10A	0.08A
200VAC	0.17A	0.17A
265VAC	0.23A	0.22A



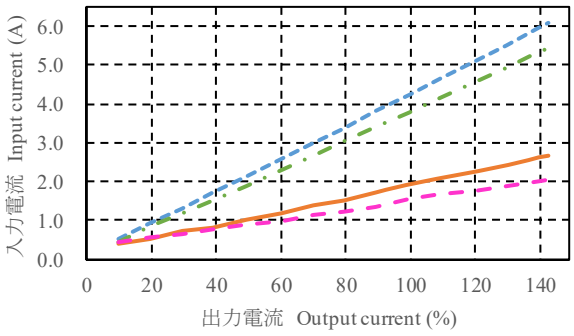
30V

入力電圧 Input Voltage	入力電流 Input Current	
	Iout : 0%	コントロールオフ Control OFF
90VAC	0.11A	0.13A
100VAC	0.11A	0.17A
200VAC	0.18A	0.24A
265VAC	0.23A	0.29A



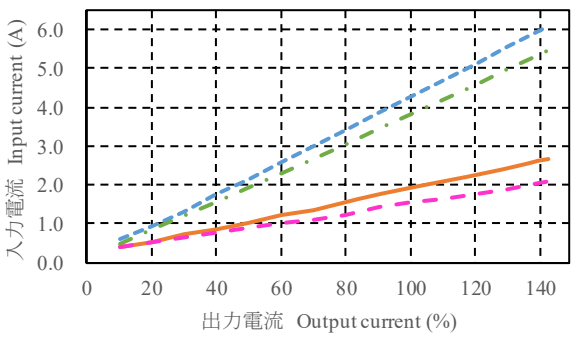
36V

入力電圧 Input Voltage	入力電流 Input Current	
	Iout : 0%	コントロールオフ Control OFF
90VAC	0.10A	0.13A
100VAC	0.10A	0.14A
200VAC	0.17A	0.24A
265VAC	0.23A	0.29A



48V

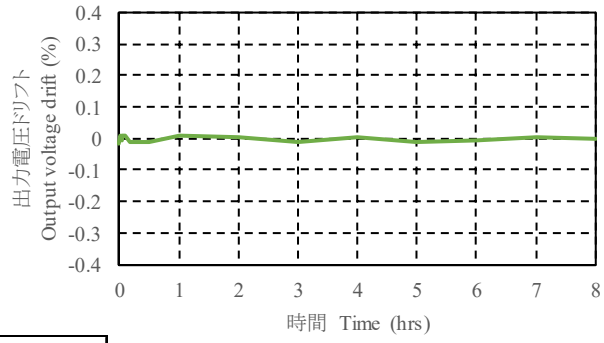
入力電圧 Input Voltage	入力電流 Input Current	
	Iout : 0%	コントロールオフ Control OFF
90VAC	0.10A	0.07A
100VAC	0.10A	0.08A
200VAC	0.17A	0.17A
265VAC	0.23A	0.22A



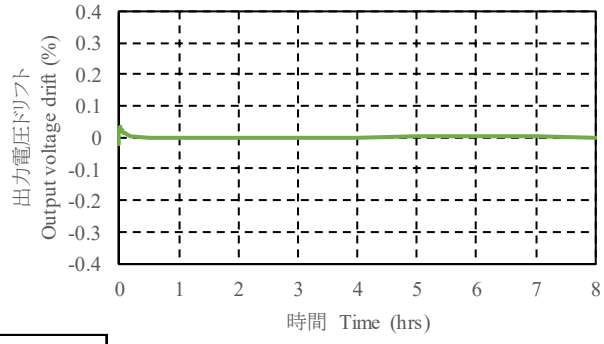
2-2. 通電ドリフト特性
Warm up voltage drift characteristics

条件 Condition
Vin : 100VAC
Iout : 100%
Istb : 100%
空冷方式 : 自然空冷
Cooling : Convection cooling
Ta : 25℃

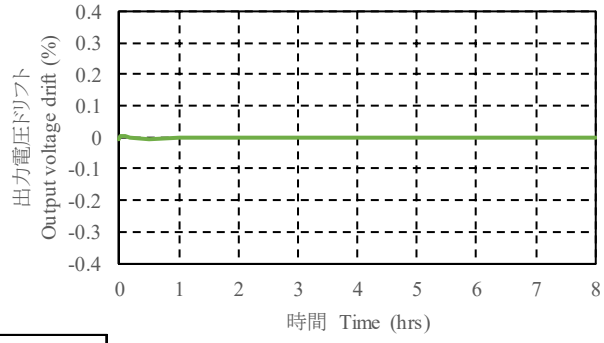
24V



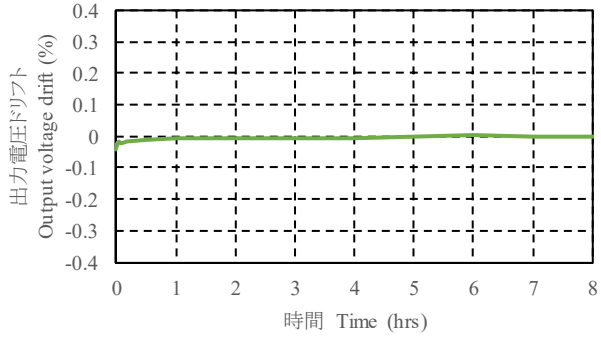
30V



36V

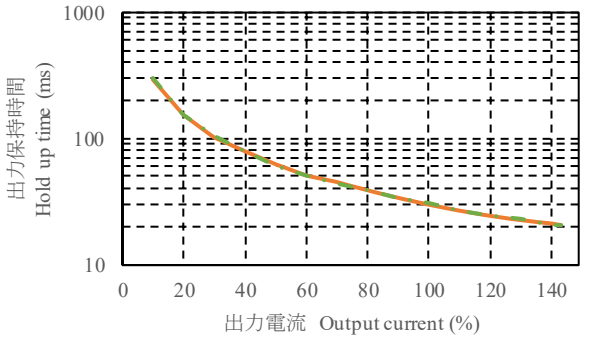


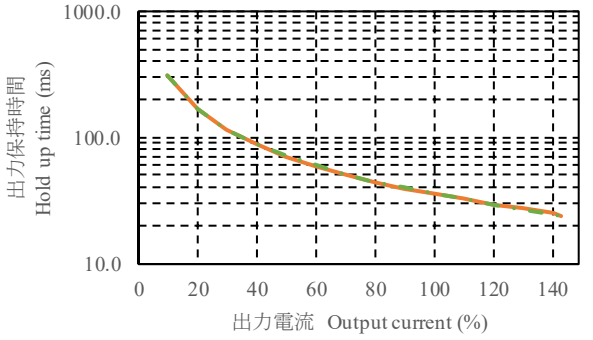
48V

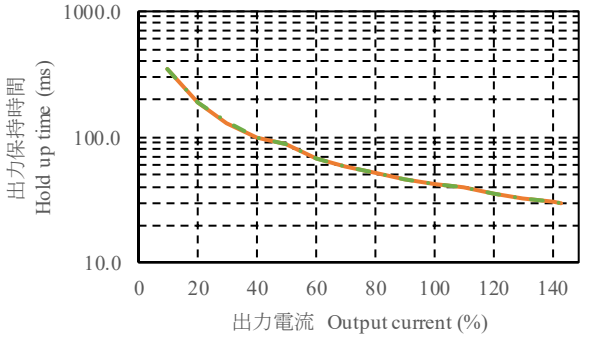


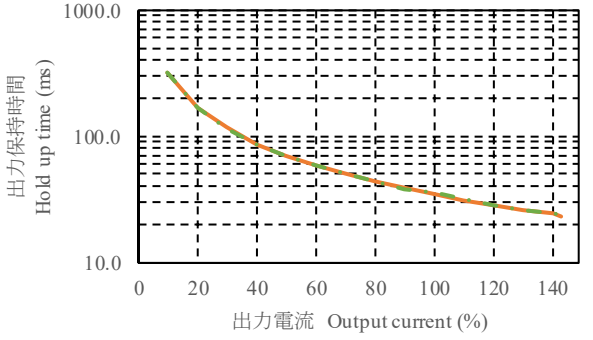
2-3. 出力保持時間特性
Hold up time characteristics

条件 Condition
Vin : 100VAC
200VAC
Istb : 100%
空冷方式 : 強制空冷
Cooling : Forced air cooling
Ta : 25℃





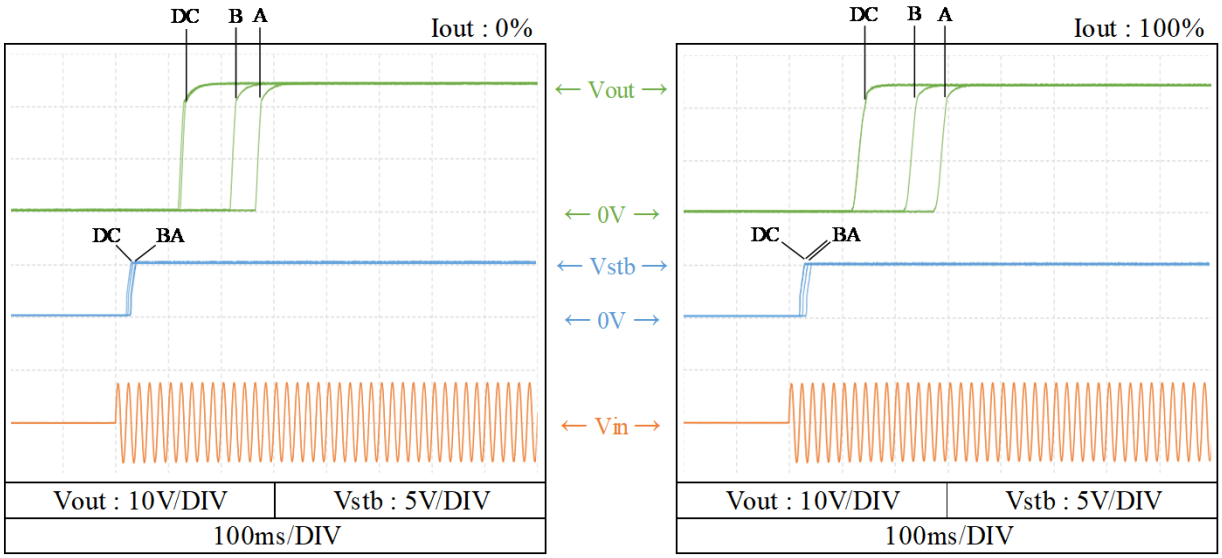




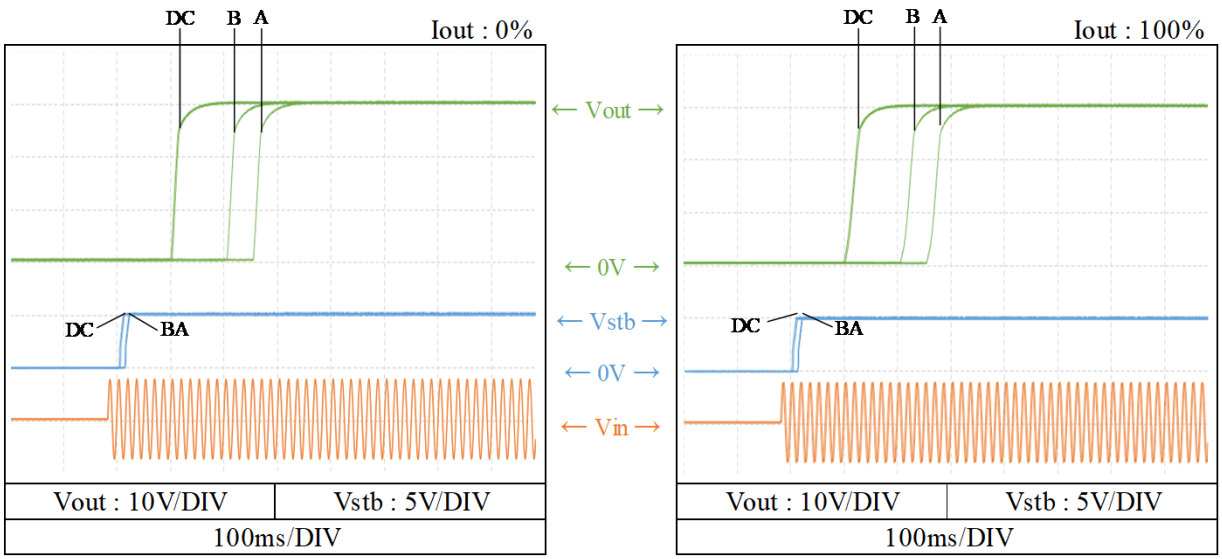
2-4. 出力立ち上がり特性 Output rise characteristics

条件 Condition
Vin : 90VAC (A)
100VAC (B)
200VAC (C)
265VAC (D)
Istb : 100%
空冷方式 : 自然空冷
Cooling : Convection cooling
Ta : 25℃

24V



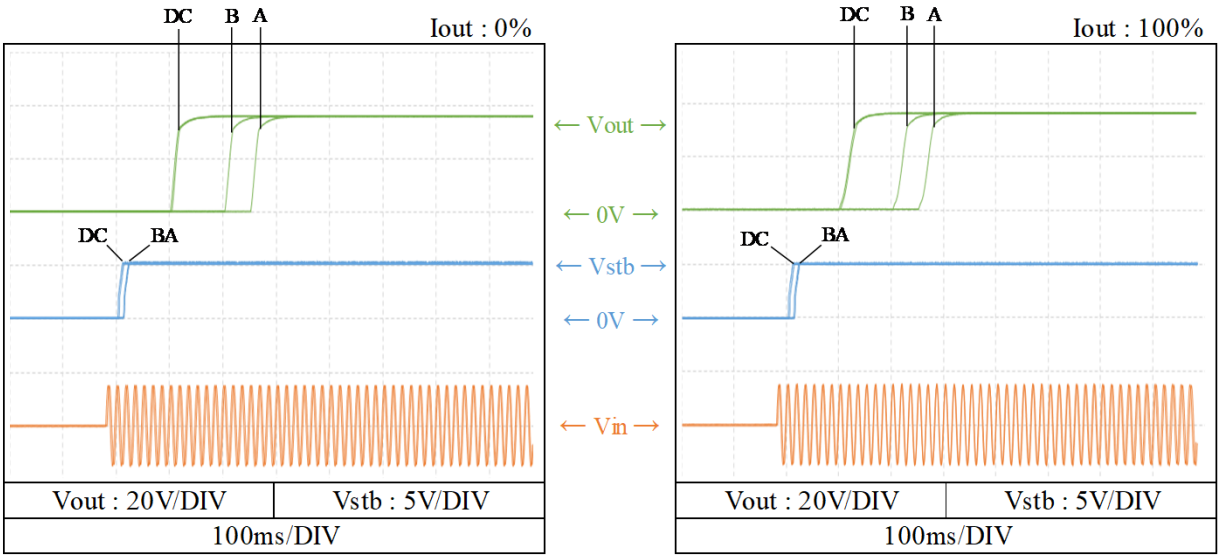
30V



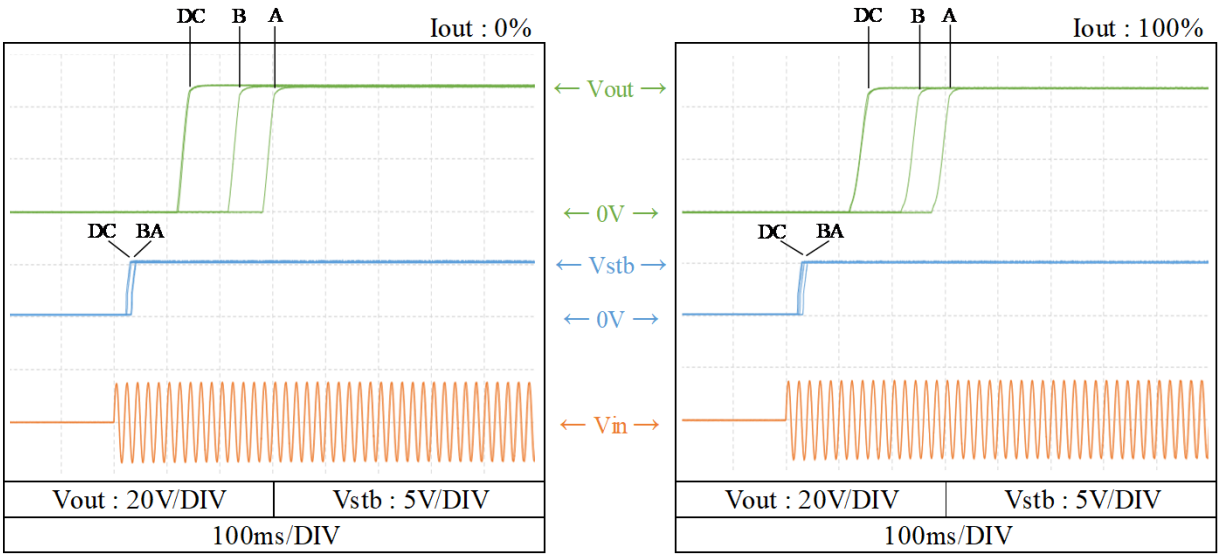
2-4. 出力立ち上がり特性 Output rise characteristics

条件 Condition
Vin : 90VAC (A)
100VAC (B)
200VAC (C)
265VAC (D)
Istb : 100%
空冷方式 : 自然空冷
Cooling : Convection cooling
Ta : 25°C

36V



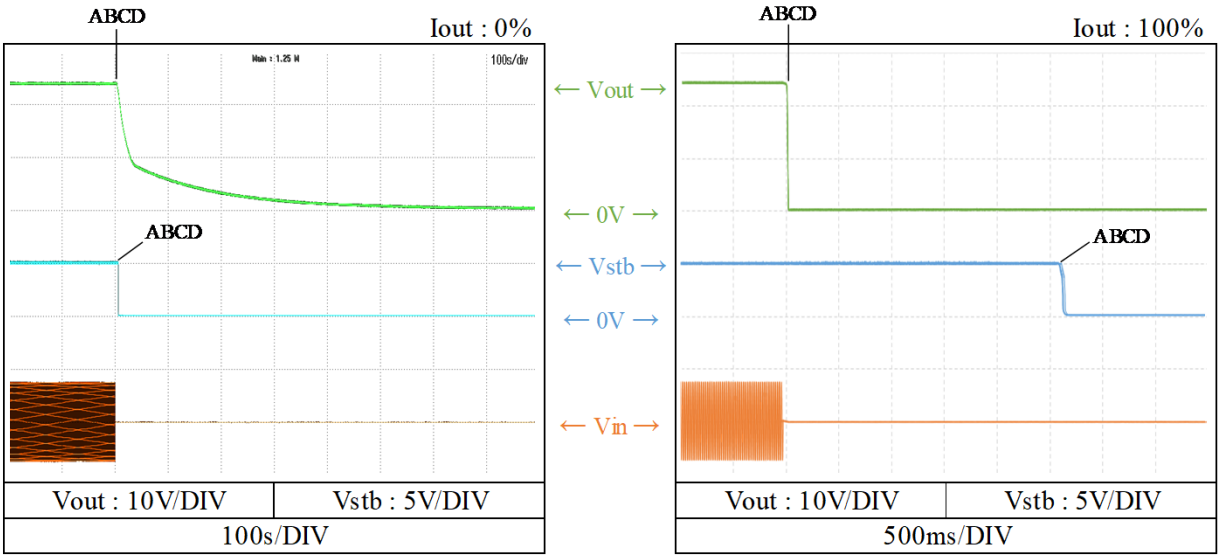
48V



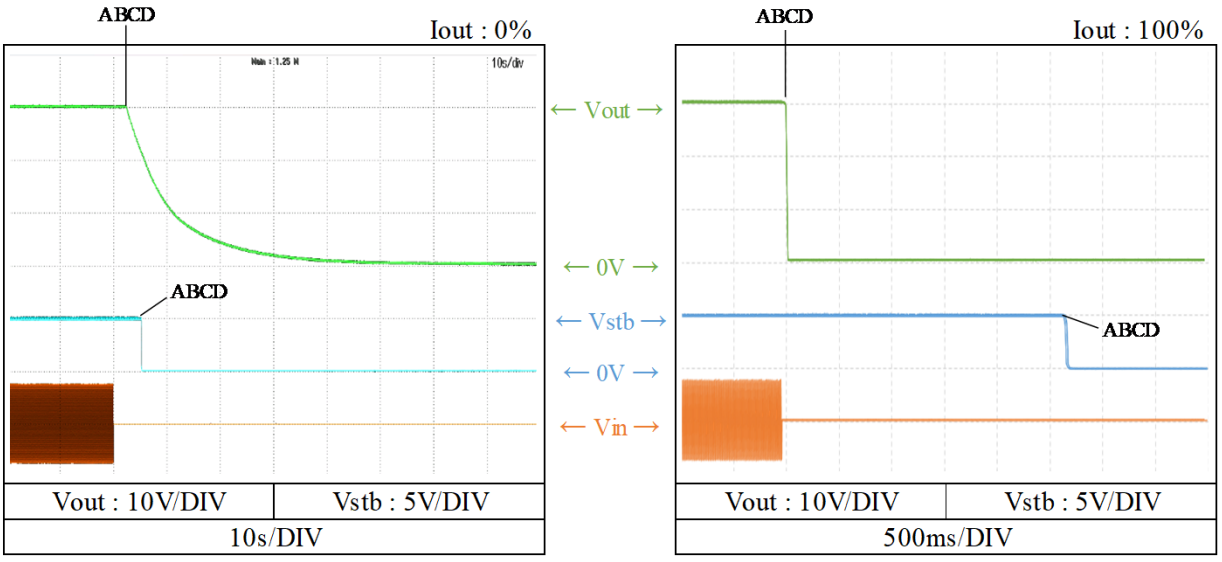
2-5.　出力立ち下がり特性　Output fall characteristics

条件 Condition
Vin : 90VAC (A) 100VAC (B) 200VAC (C) 265VAC (D)
Istb : 100%
空冷方式 : 自然空冷
Cooling : Convection cooling
Ta : 25°C

24V



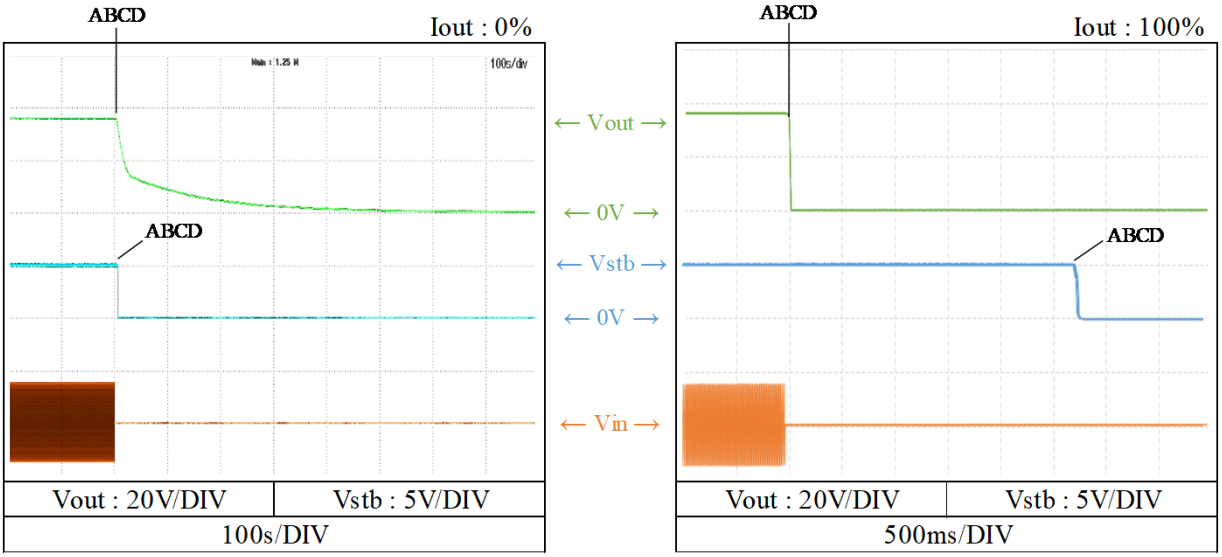
30V



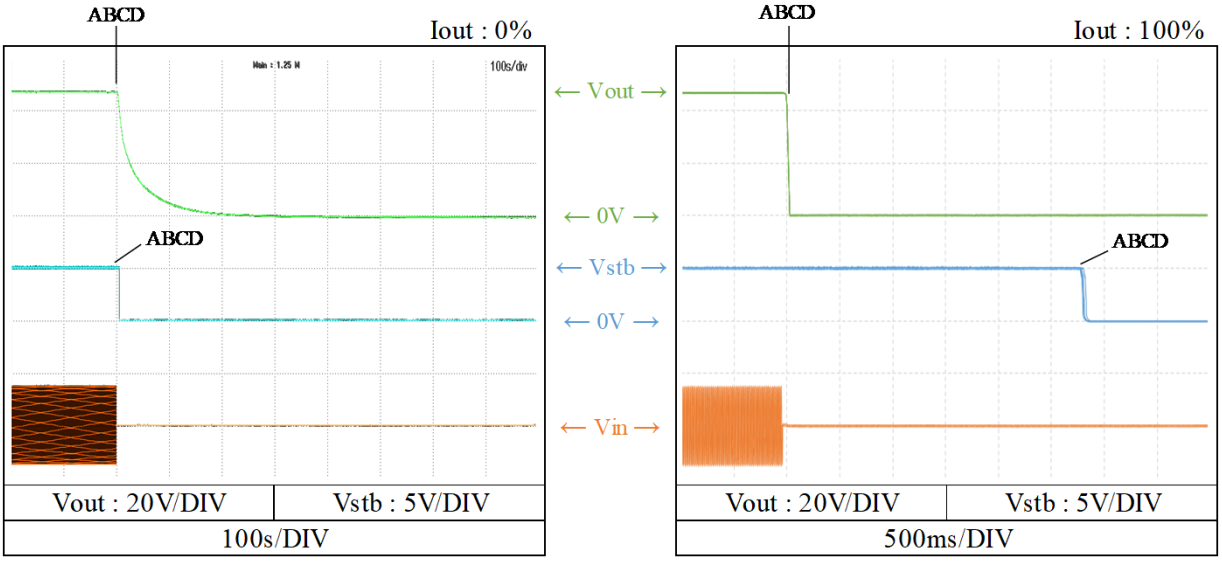
2-5.　出力立ち下がり特性　Output fall characteristics

条件　Vin :　90VAC (A)
Condition　100VAC (B)
200VAC (C)
265VAC (D)
Istb :　100%
空冷方式 : 自然空冷
Cooling :　Convection cooling
Ta :　25°C

36V



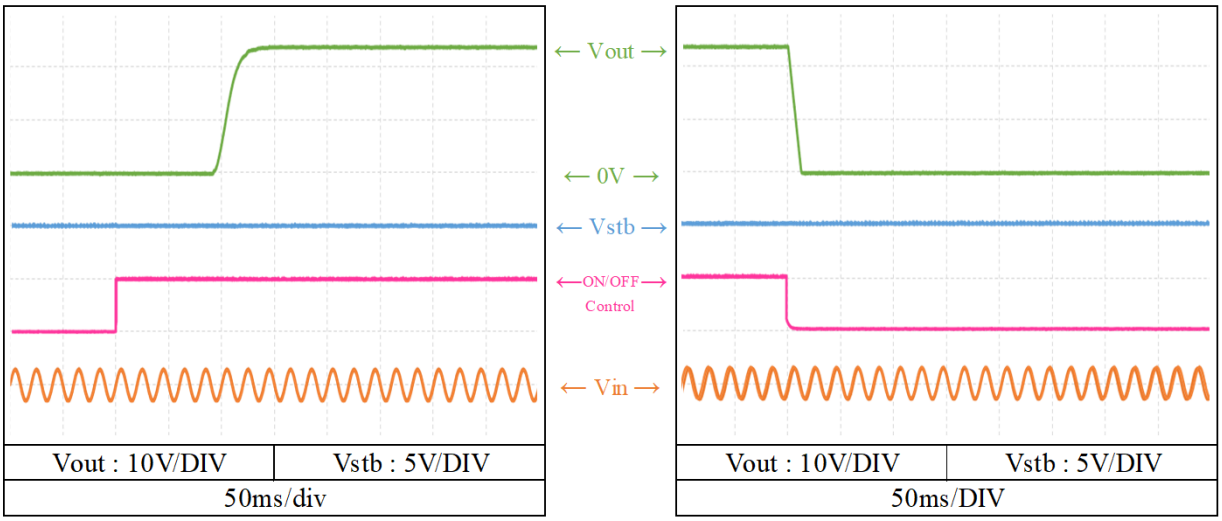
48V



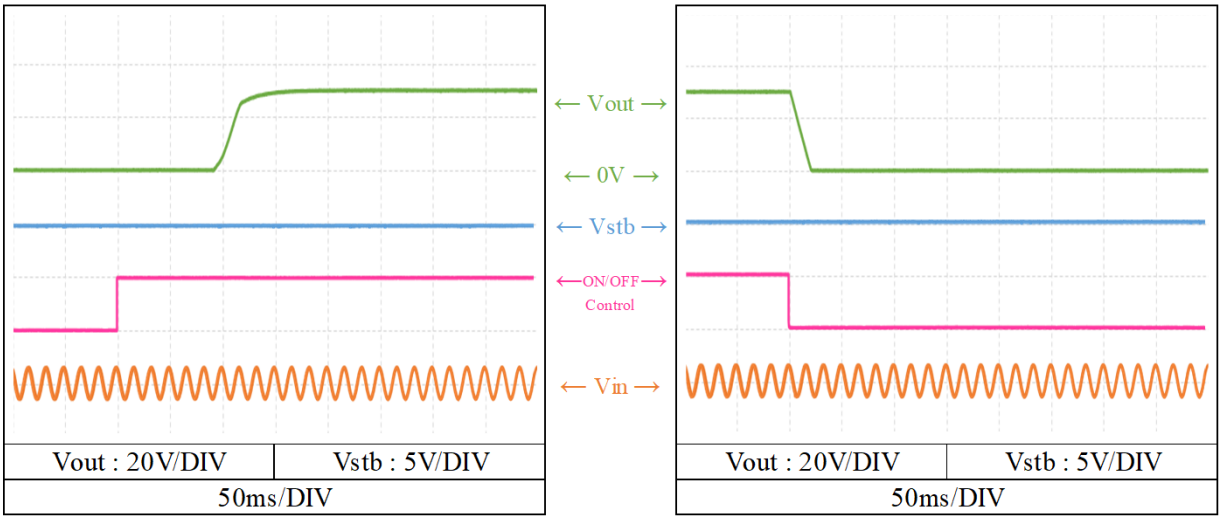
2-6. オン・オフコントロール時出力立ち上がり、立下がり特性
Output rise and fall characteristics with ON/OFF Control

条件 Condition
Vin : 100VAC
Iout : 100%
Istb : 100%
空冷方式 : 強制空冷
Cooling : Forced air cooling
Ta : 25℃

24V



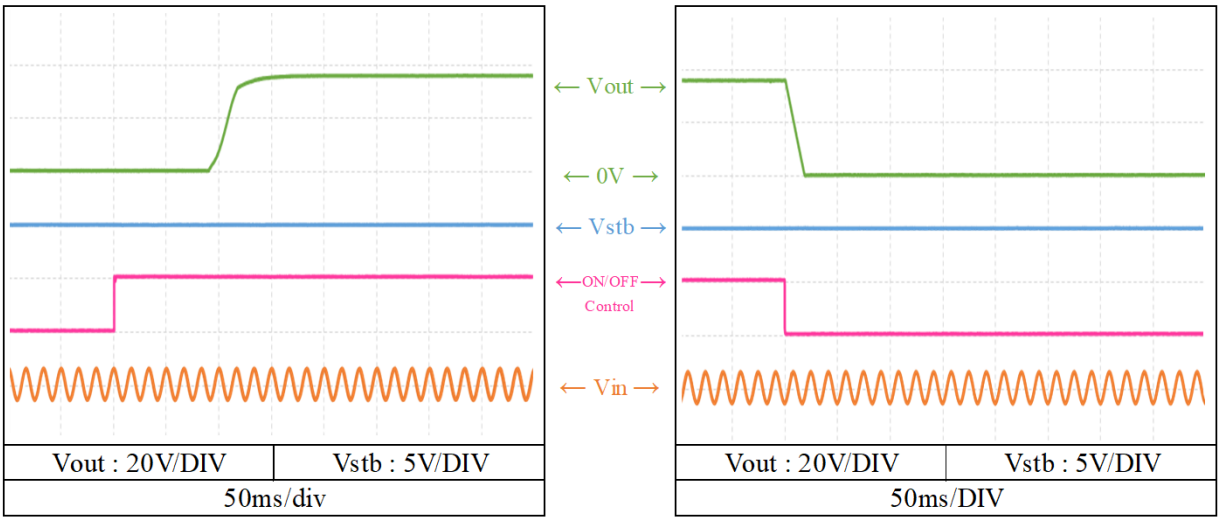
30V



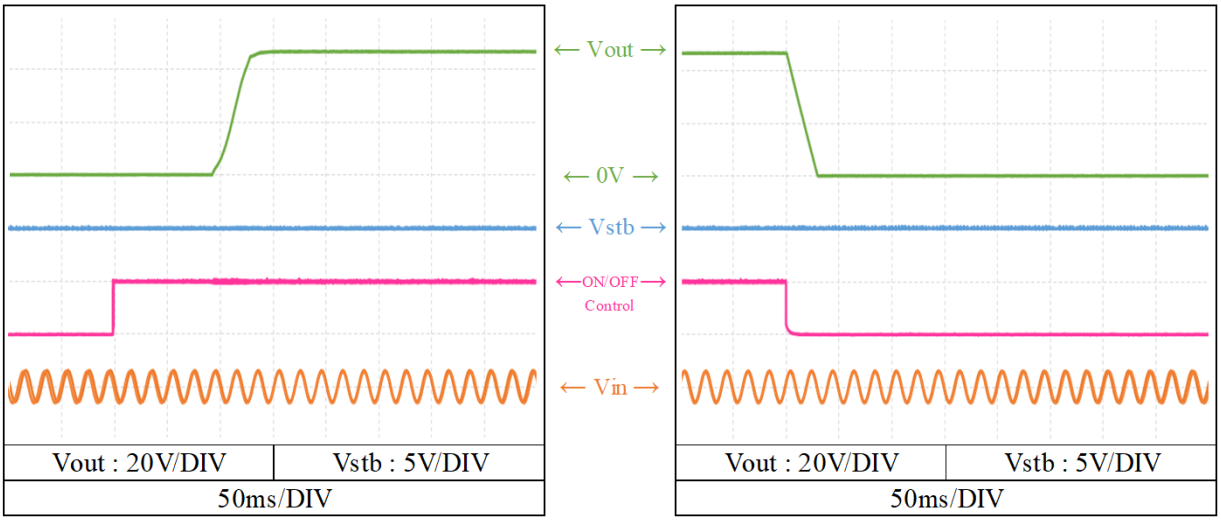
2-6. オン・オフコントロール時出力立ち上がり、立下がり特性
Output rise and fall characteristics with ON/OFF Control

条件 Condition
Vin : 100VAC
Iout : 100%
Istb : 100%
空冷方式 : 強制空冷
Cooling : Forced air cooling
Ta : 25℃

36V



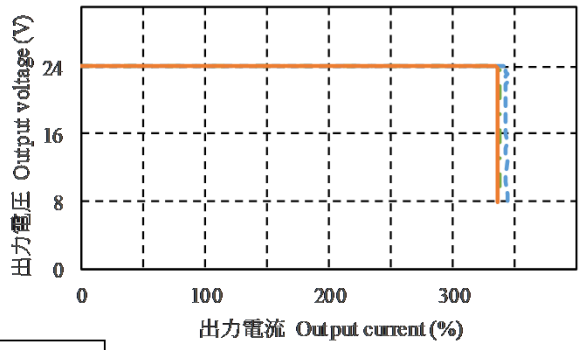
48V



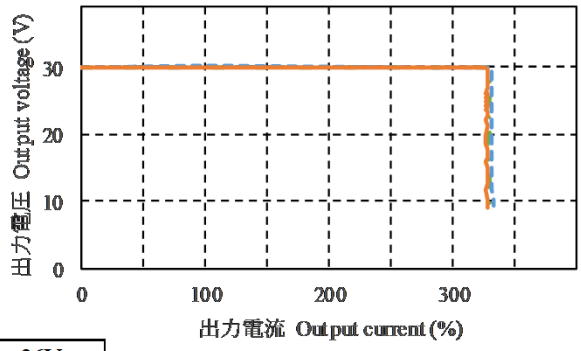
2-7. 過電流保護特性
Over current protection (OCP) characteristics

条件 Condition
Vin : 100VAC
Istb : 100%
空冷方式 : 自然空冷
Cooling : Convection cooling
Ta : -20℃ / 25℃ / 50℃

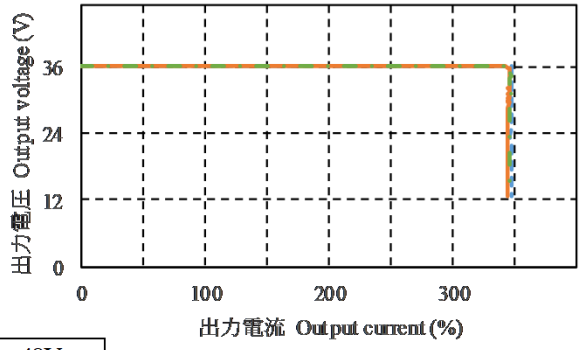
24V



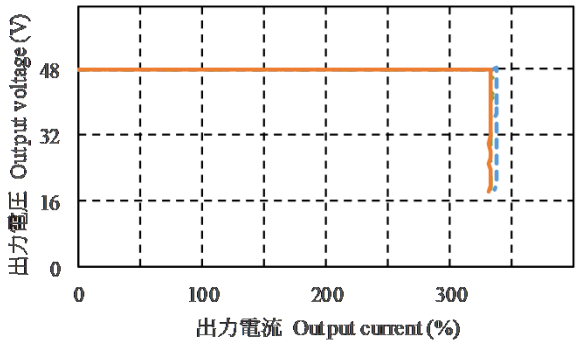
30V



36V

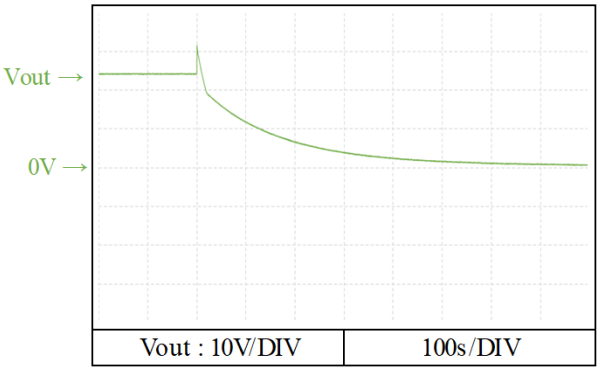


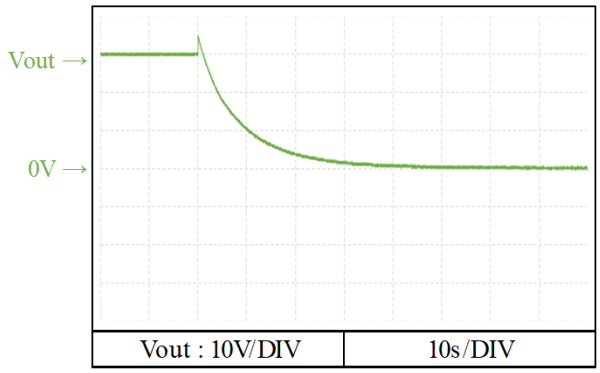
48V

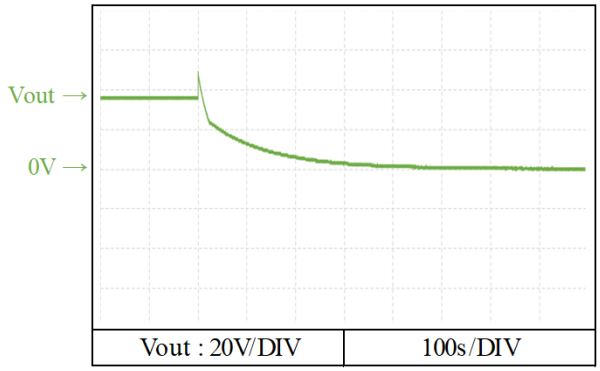


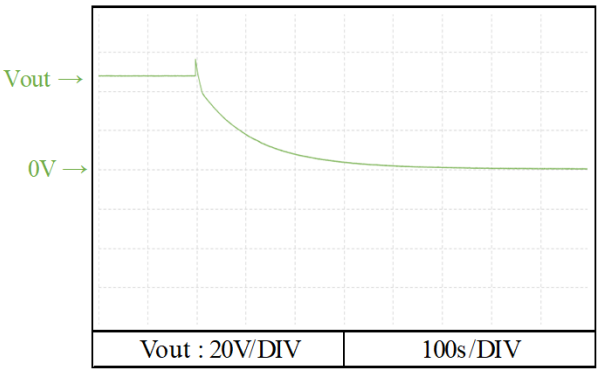
2-8. 過電圧保護特性
Over voltage protection (OVP) characteristics

条件 Condition
Vin : 100VAC
Iout : 0%
空冷方式 : 自然空冷
Cooling : Convection cooling
Istb : 0%
Ta : 25℃









2-9. 過渡応答(負荷急変)特性 Dynamic load response characteristics

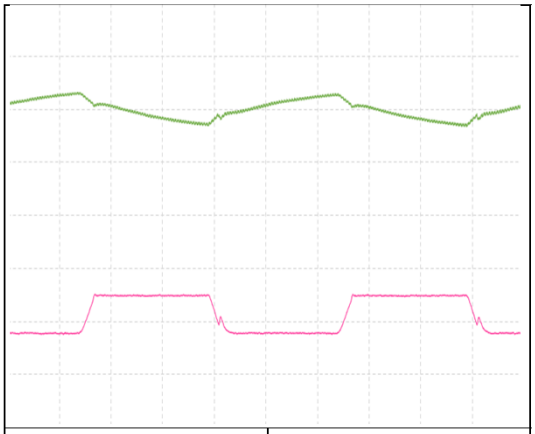
条件	Vin :	100VAC
Condition	Iout :	50% ↔ 100%
		(tr = tf = 75us)
	Istb :	100%
	冷却方式 :	自然空冷
	Cooling :	Convection cooling
	Ta :	25℃

24V

f = 100Hz

Vout : 0.5V/DIV	Iout : 10A/DIV
2ms/DIV	
+0.81%	-1.17%

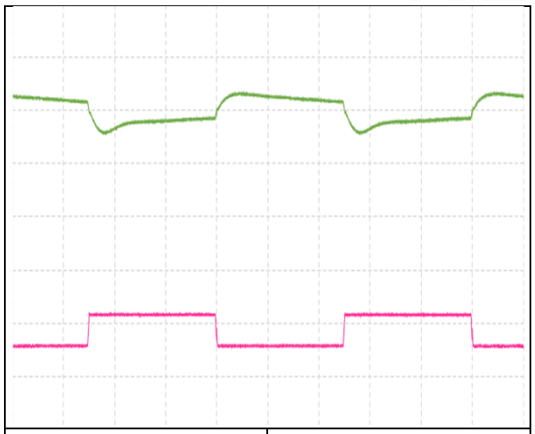
f = 1kHz



Vout : 0.5V/DIV	Iout : 10A/DIV
0.2ms/DIV	
+0.68%	-0.68%

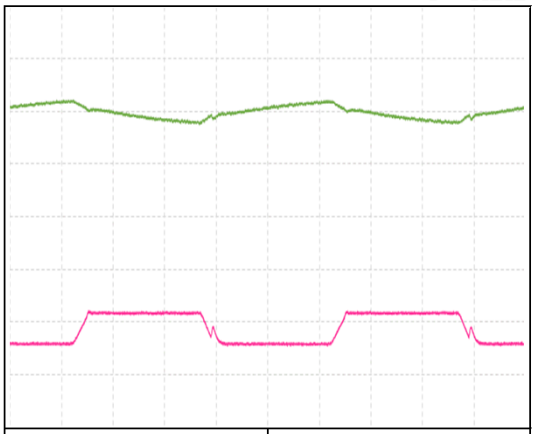
30V

f = 100Hz



Vout : 0.5V/DIV	Iout : 10A/DIV
2ms/DIV	
+0.57%	-0.77%

f = 1kHz



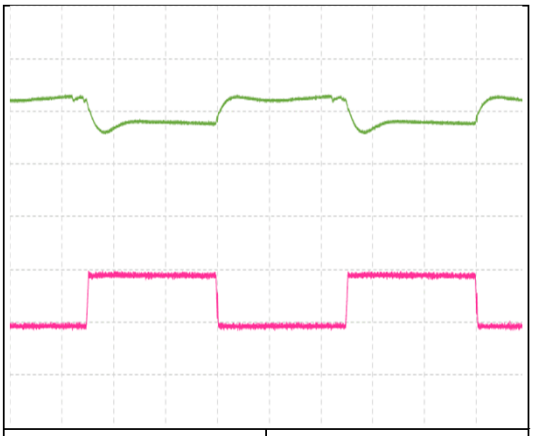
Vout : 0.5V/DIV	Iout : 10A/DIV
0.2ms/DIV	
+0.36%	-0.42%

2-9. 過渡応答(負荷急変)特性 Dynamic load response characteristics

条件	Vin :	100VAC
Condition	Iout :	50% ↔ 100%
		(tr = tf = 75us)
	Istb :	100%
	冷却方式 :	自然空冷
	Cooling :	Convection cooling
	Ta :	25℃

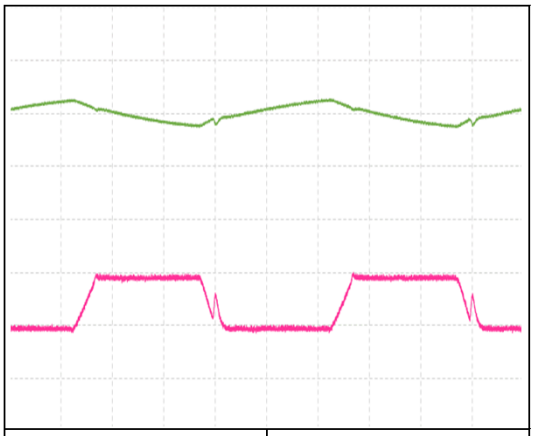
36V

f = 100Hz



Vout : 0.5V/DIV	Iout : 5A/DIV
2ms/DIV	
+0.44%	-0.60%

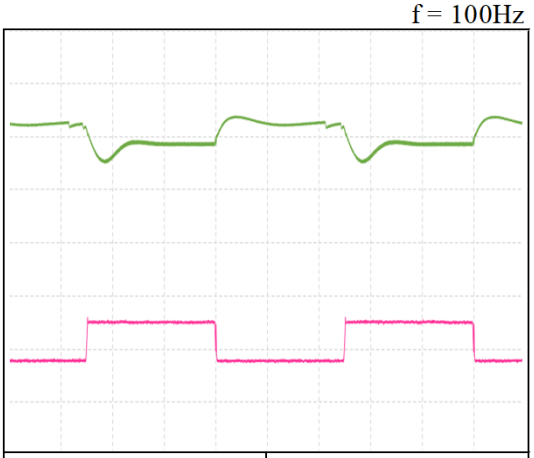
f = 1kHz



Vout : 0.5V/DIV	Iout : 5A/DIV
0.2ms/DIV	
+0.39%	-0.37%

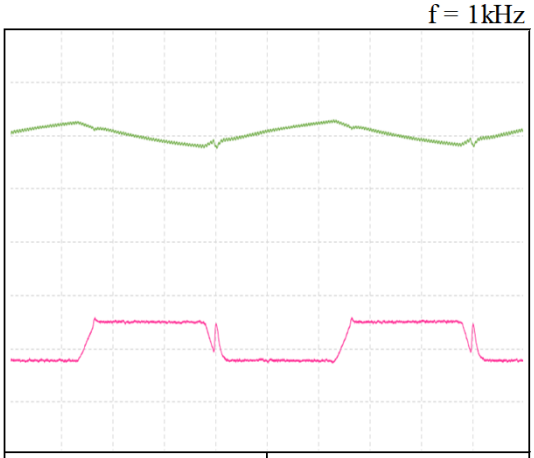
48V

f = 100Hz



Vout : 0.5V/DIV	Iout : 5A/DIV
2ms/DIV	
+0.41%	-0.52%

f = 1kHz

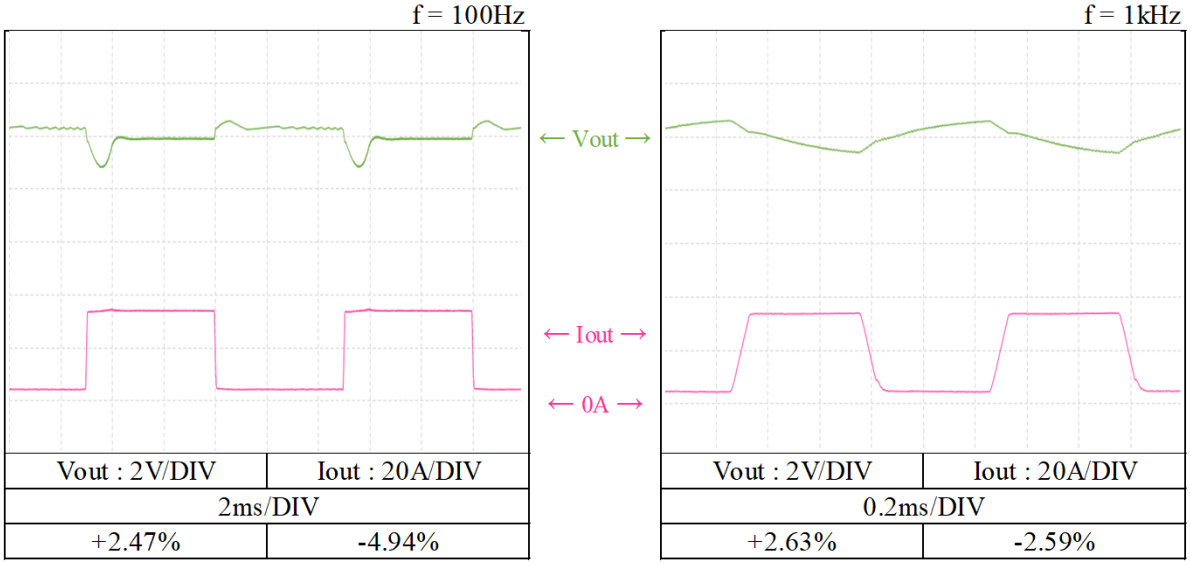


Vout : 0.5V/DIV	Iout : 5A/DIV
0.2ms/DIV	
+0.31%	-0.24%

2-9. 過渡応答(負荷急変)特性 Dynamic load response characteristics

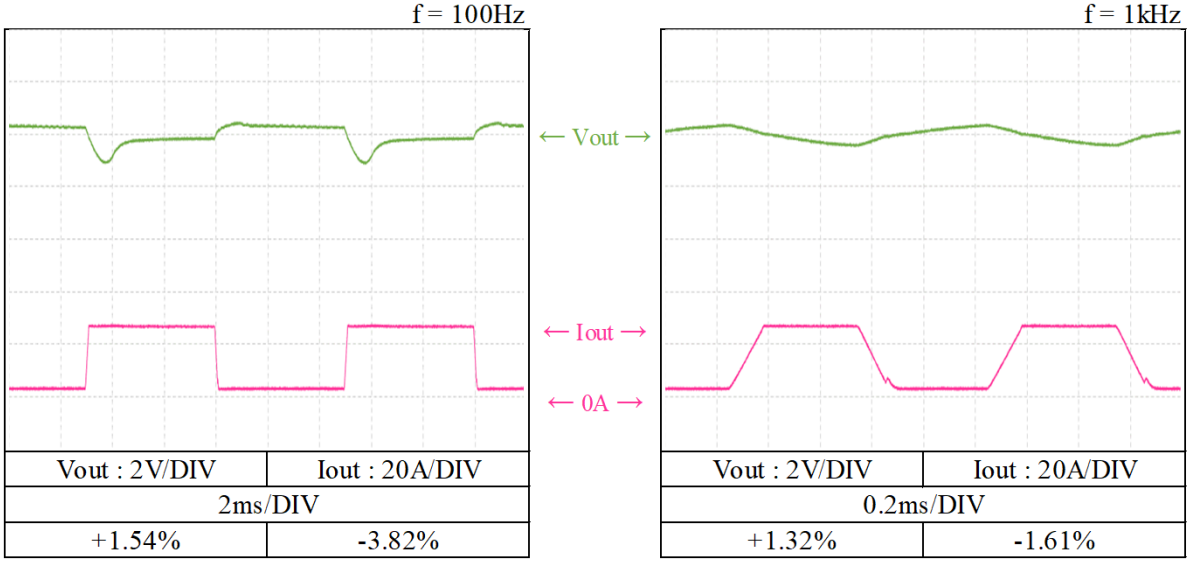
条件 Vin : 100VAC
Condition Iout/Pout : 25% ↔ 800W
(tr = tf = 75us)
Istb : 100%
空冷方式 : 自然空冷
Cooling : Convection cooling
Ta : 25℃

24V



Vout : 2V/DIV	Iout : 20A/DIV	Vout : 2V/DIV	Iout : 20A/DIV
2ms/DIV		0.2ms/DIV	
+2.47%	-4.94%	+2.63%	-2.59%

30V

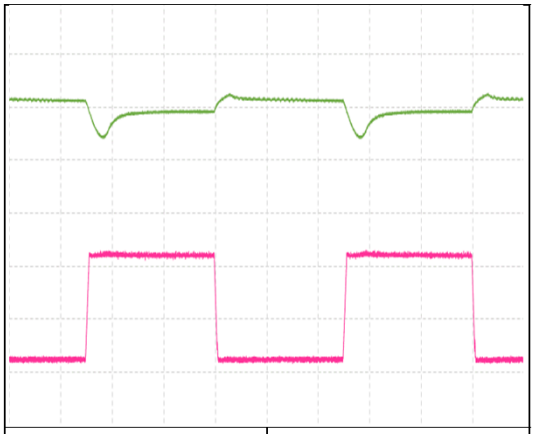


Vout : 2V/DIV	Iout : 20A/DIV	Vout : 2V/DIV	Iout : 20A/DIV
2ms/DIV		0.2ms/DIV	
+1.54%	-3.82%	+1.32%	-1.61%

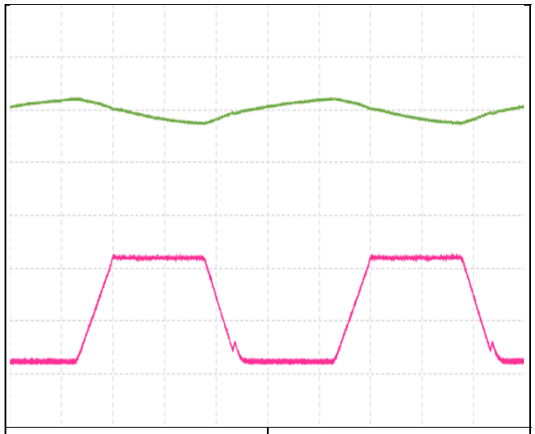
2-9. 過渡応答(負荷急変)特性 Dynamic load response characteristics

条件 Condition
Vin : 100VAC
Iout/Pout : 25% ↔ 800W
(tr = tf = 75us)
Istb : 100%
空冷方式 : 自然空冷
Cooling : Convection cooling
Ta : 25℃

36V

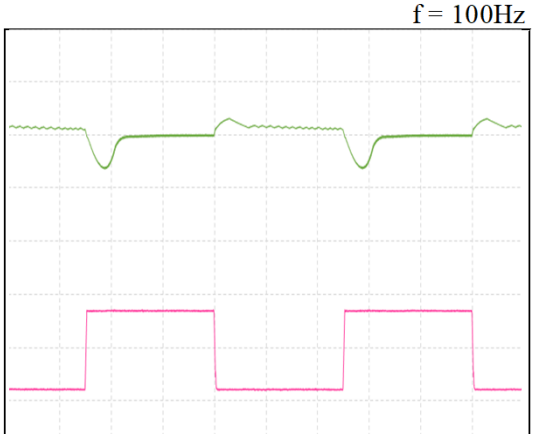


Vout : 2V/DIV	Iout : 10A/DIV
2ms/DIV	
+1.48%	-3.28%

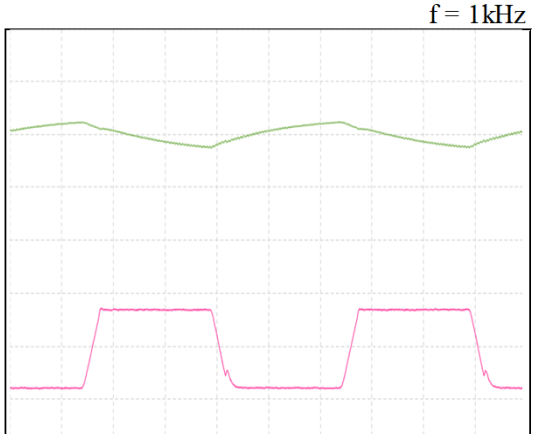


Vout : 2V/DIV	Iout : 20A/DIV
0.2ms/DIV	
+1.31%	-1.55%

48V



Vout : 2V/DIV	Iout : 10A/DIV
2ms/DIV	
+1.31%	-2.67%

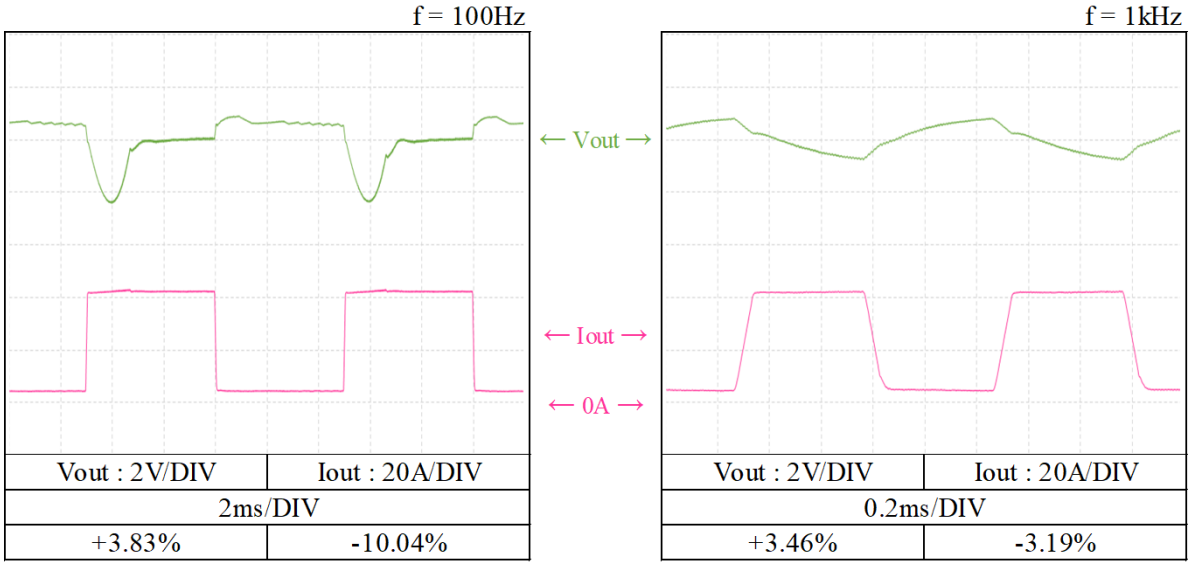


Vout : 2V/DIV	Iout : 10A/DIV
0.2ms/DIV	
+1.00%	-1.08%

2-9. 過渡応答(負荷急変)特性 Dynamic load response characteristics

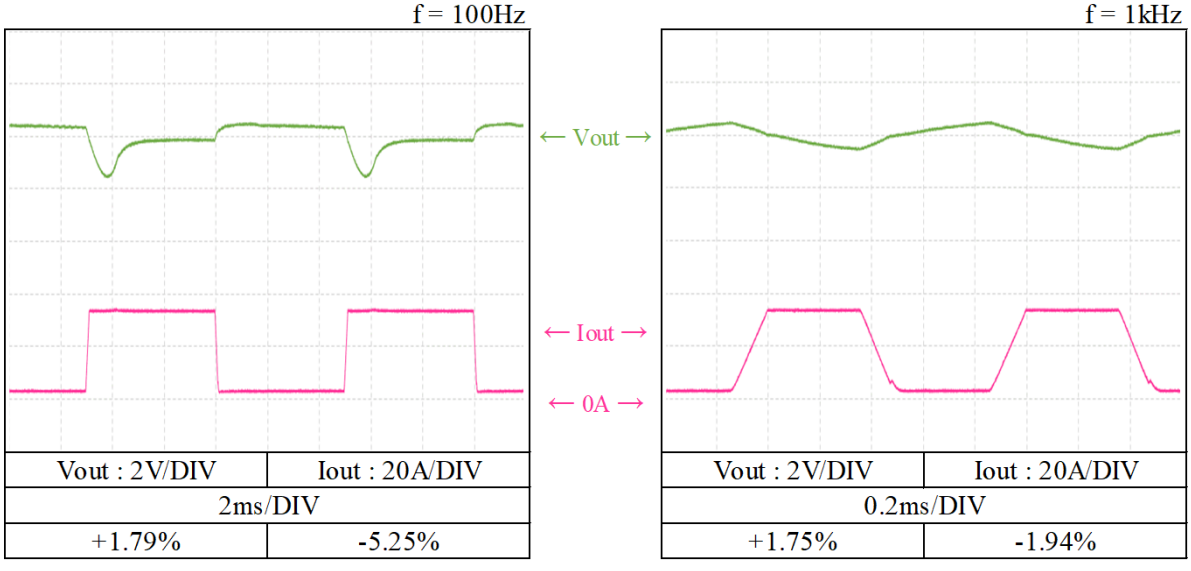
条件 Condition
Vin : 200VAC
Iout/Pout : 25% ↔ 1000W
(tr = tf = 75us)
Istb : 100%
空冷方式 : 自然空冷
Cooling : Convection cooling
Ta : 25℃

24V



Vout : 2V/DIV	Iout : 20A/DIV	Vout : 2V/DIV	Iout : 20A/DIV
2ms/DIV		0.2ms/DIV	
+3.83%	-10.04%	+3.46%	-3.19%

30V



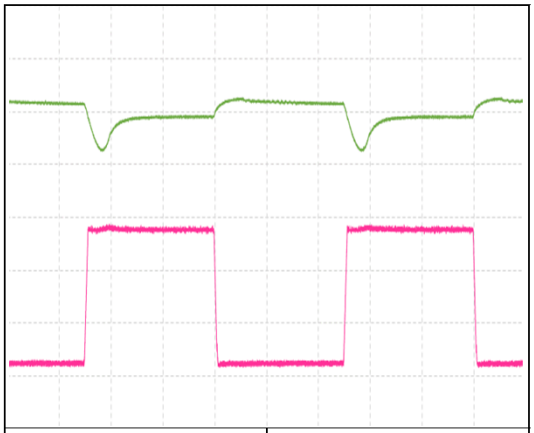
Vout : 2V/DIV	Iout : 20A/DIV	Vout : 2V/DIV	Iout : 20A/DIV
2ms/DIV		0.2ms/DIV	
+1.79%	-5.25%	+1.75%	-1.94%

2-9. 過渡応答(負荷急変)特性 Dynamic load response characteristics

条件 Condition
Vin : 200VAC
Iout/Pout : 25% ↔ 1000W
(tr = tf = 75us)
Istb : 100%
空冷方式 : 自然空冷
Cooling : Convection cooling
Ta : 25℃

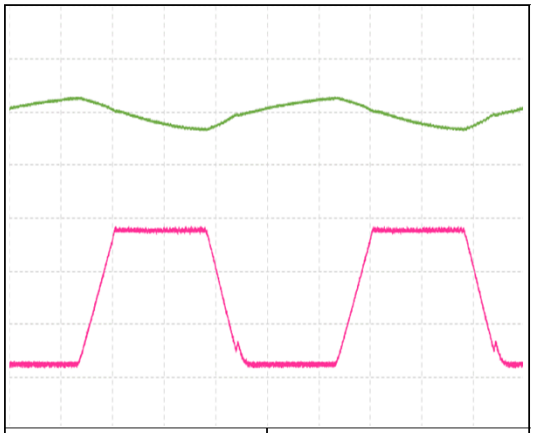
36V

f = 100Hz



Vout : 2V/DIV	Iout : 10A/DIV
2ms/DIV	
+1.49%	-4.15%

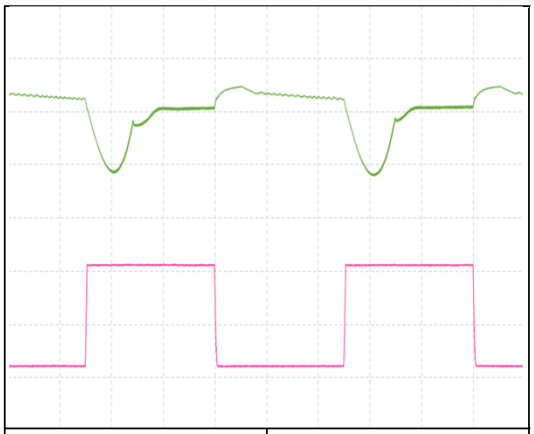
f = 1kHz



Vout : 2V/DIV	Iout : 10A/DIV
0.2ms/DIV	
+1.61%	-1.95%

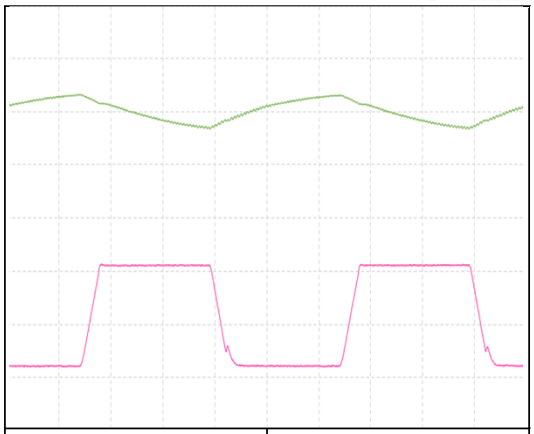
48V

f = 100Hz



Vout : 2V/DIV	Iout : 10A/DIV
2ms/DIV	
+2.00%	-5.02%

f = 1kHz



Vout : 2V/DIV	Iout : 10A/DIV
0.2ms/DIV	
+1.37%	-1.35%

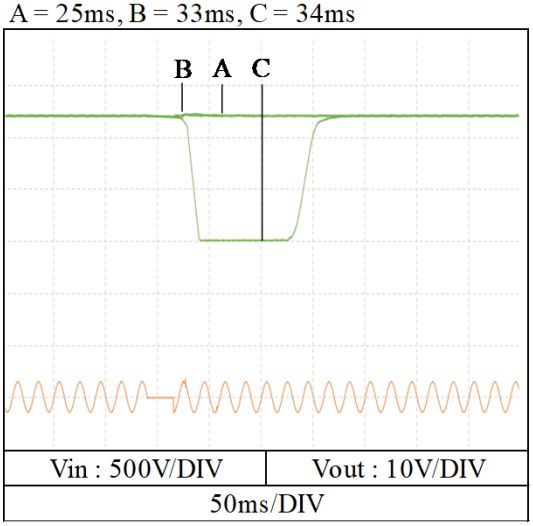
2-10.　入力電圧瞬停特性　Response to brown out characteristics

条件　Iout : 100%
Condition　Istb : 100%
空冷方式 : 自然空冷
Cooling : Convection cooling
Ta : 25℃

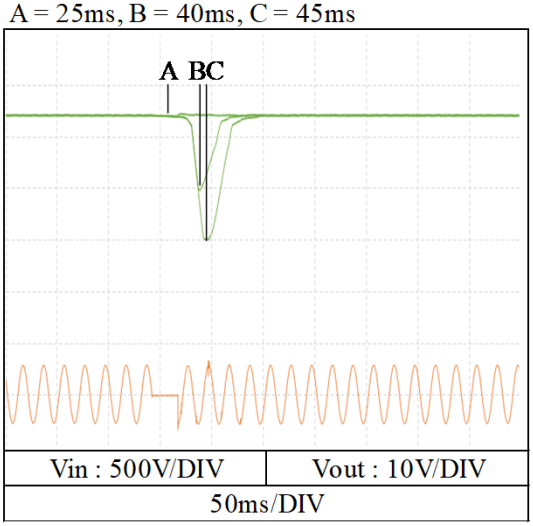
瞬停時間　Interruption time
A : 出力電圧の低下なし　No output voltage drop
B : 出力電圧が0Vまで低下しない　No output voltage drop to 0V
C : 出力電圧が0Vまで低下　Output voltage drops to 0V

24V

Vin : 100VAC
A = 25ms, B = 33ms, C = 34ms

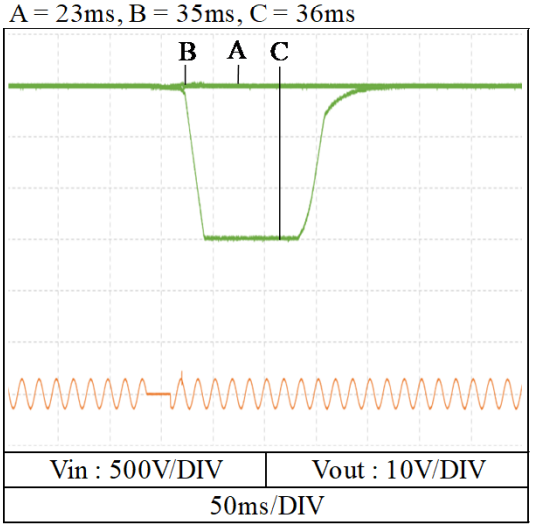


Vin : 200VAC
A = 25ms, B = 40ms, C = 45ms

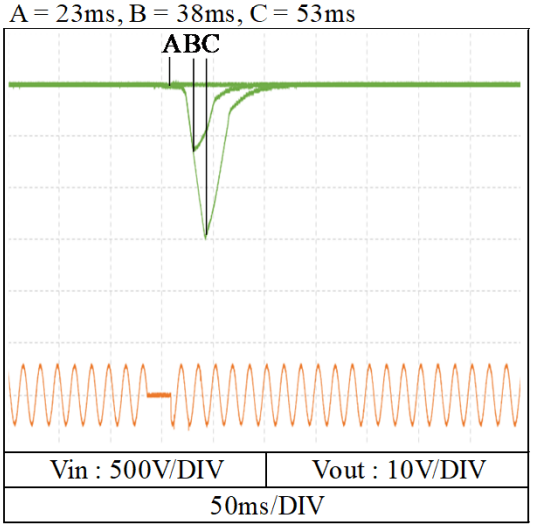


30V

Vin : 100VAC
A = 23ms, B = 35ms, C = 36ms



Vin : 200VAC
A = 23ms, B = 38ms, C = 53ms



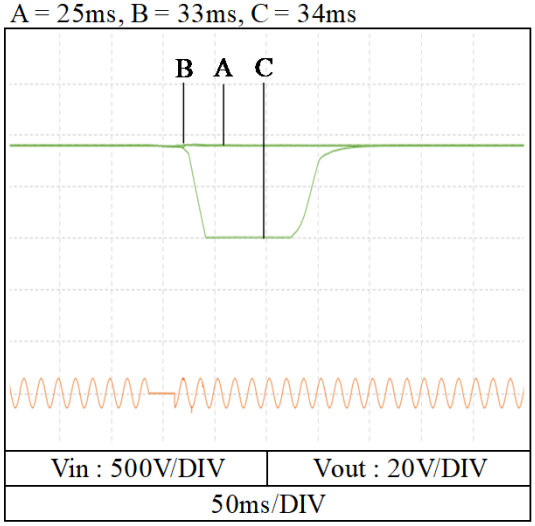
2-10.　入力電圧瞬停特性　Response to brown out characteristics

条件　Iout : 100%
Condition　Istb : 100%
空冷方式 : 自然空冷
Cooling : Convection cooling
Ta : 25℃

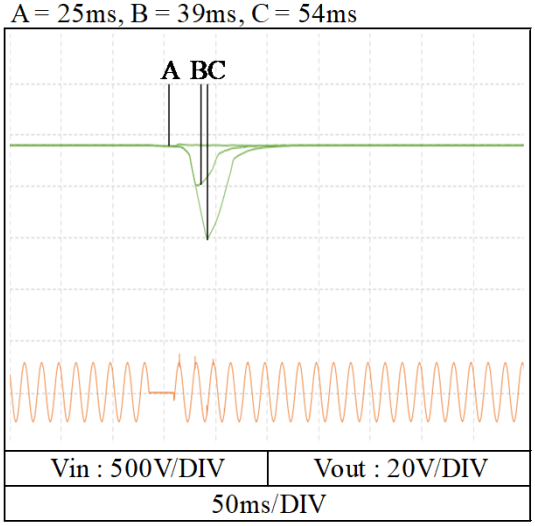
瞬停時間　Interruption time
A : 出力電圧の低下なし　No output voltage drop
B : 出力電圧が0Vまで低下しない　No output voltage drop to 0V
C : 出力電圧が0Vまで低下　Output voltage drops to 0V

36V

Vin : 100VAC
A = 25ms, B = 33ms, C = 34ms

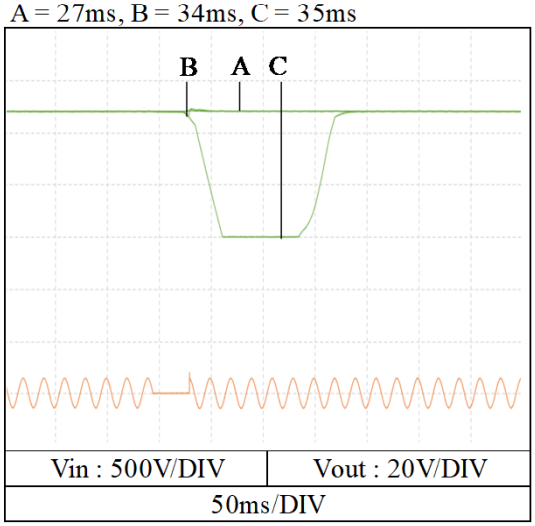


Vin : 200VAC
A = 25ms, B = 39ms, C = 54ms

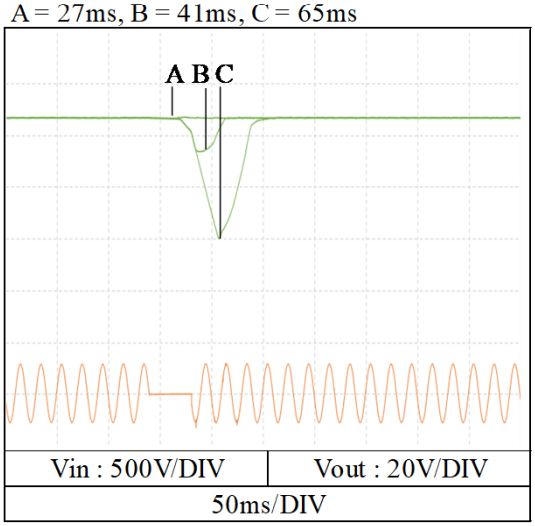


48V

Vin : 100VAC
A = 27ms, B = 34ms, C = 35ms



Vin : 200VAC
A = 27ms, B = 41ms, C = 65ms

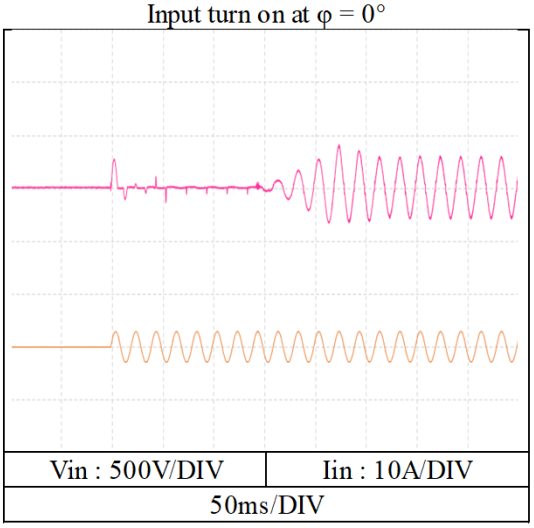


2-11.　入力サージ電流(突入電流)波形　Inrush current waveform

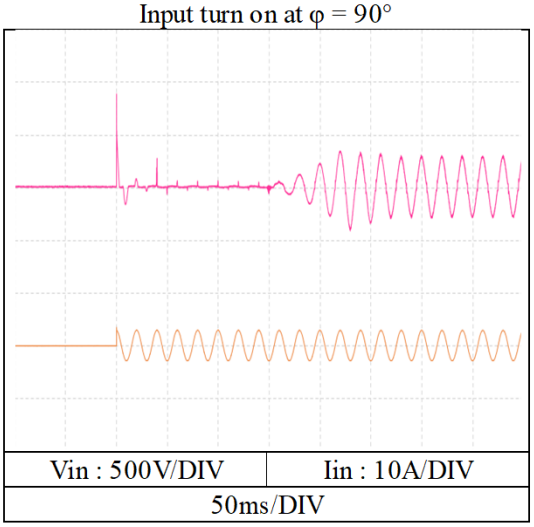
条件　Vin : 100VAC
Condition　Iout : 100%
Istb : 100%
空冷方式 : 自然空冷
Cooling : Convection cooling
Ta : 25℃

24V

Input turn on at φ = 0°

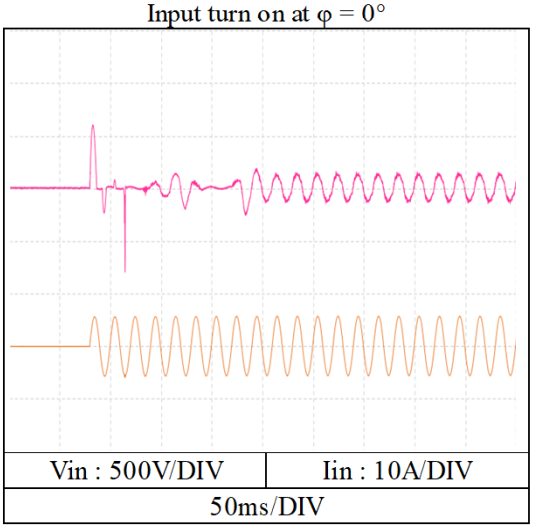


Input turn on at φ = 90°

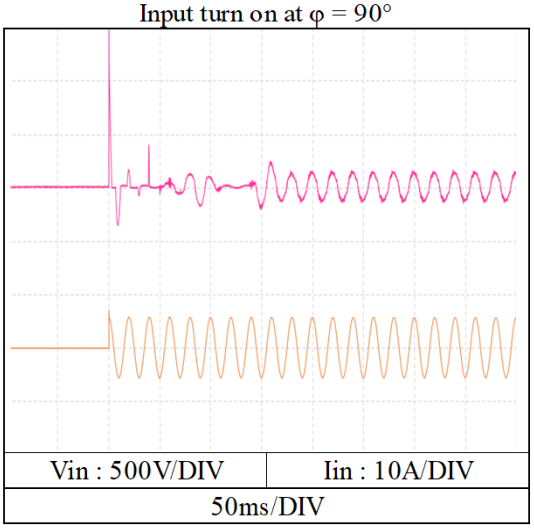


Condition　Vin : 200VAC
Iout : 100%
Istb : 100%
空冷方式 : 自然空冷
Cooling : Convection cooling
Ta : 25℃

Input turn on at φ = 0°



Input turn on at φ = 90°

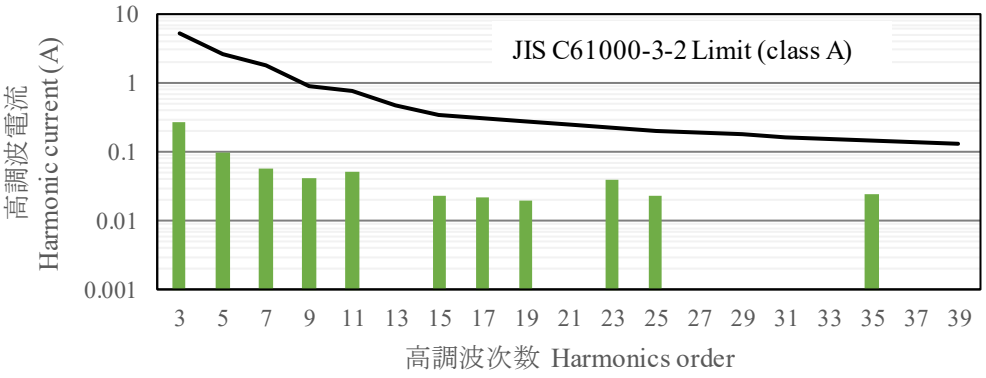


2-12. 高調波成分 Input current harmonics

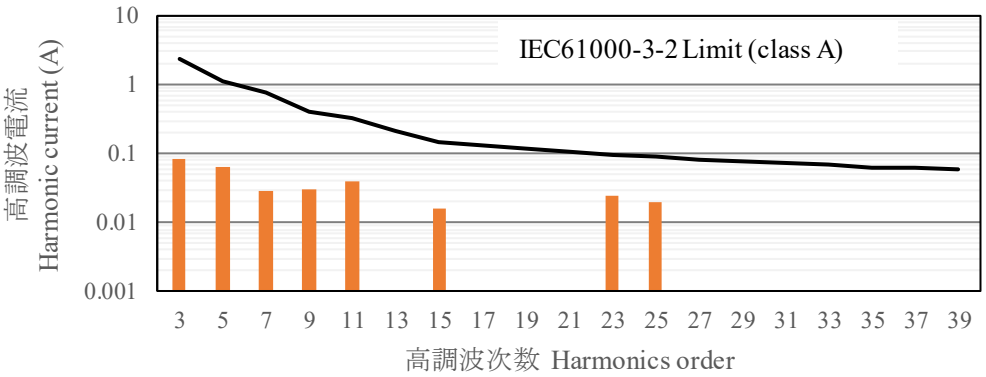
条件 Condition
Iout : 100%
Istb : 100%
空冷条件 : 自然空冷
Cooling : Convection cooling
Ta : 25℃

24V

Vin : 100VAC



Vin : 230VAC

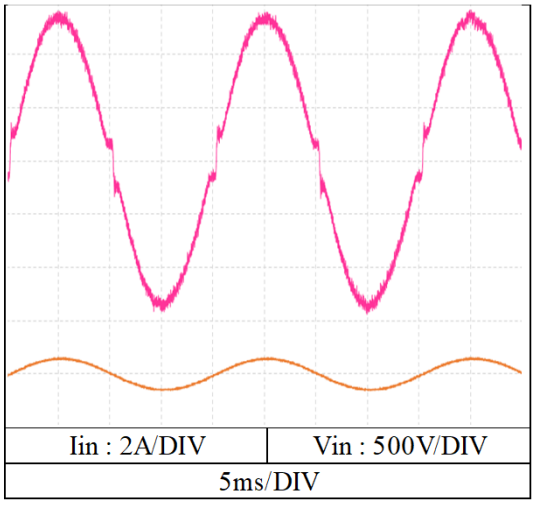


2-13. 入力電流波形 Input current waveform

条件 Condition
Iout : 100%
Istb : 100%
空冷方式 : 自然空冷
Cooling : Convection cooling
Ta : 25℃

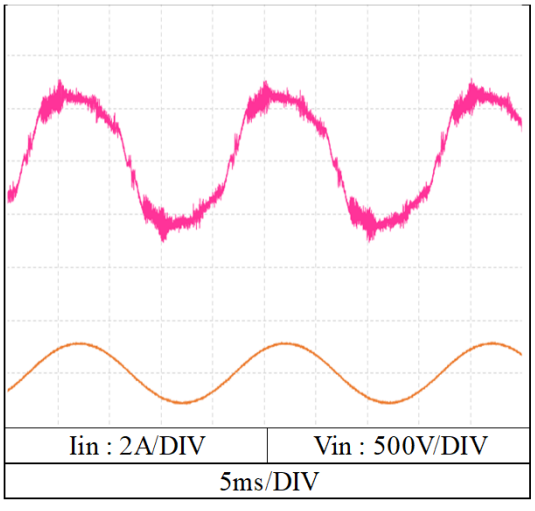
24V

Vin : 100VAC



← Iin →
← 0A →
← Vin →

Vin : 200VAC



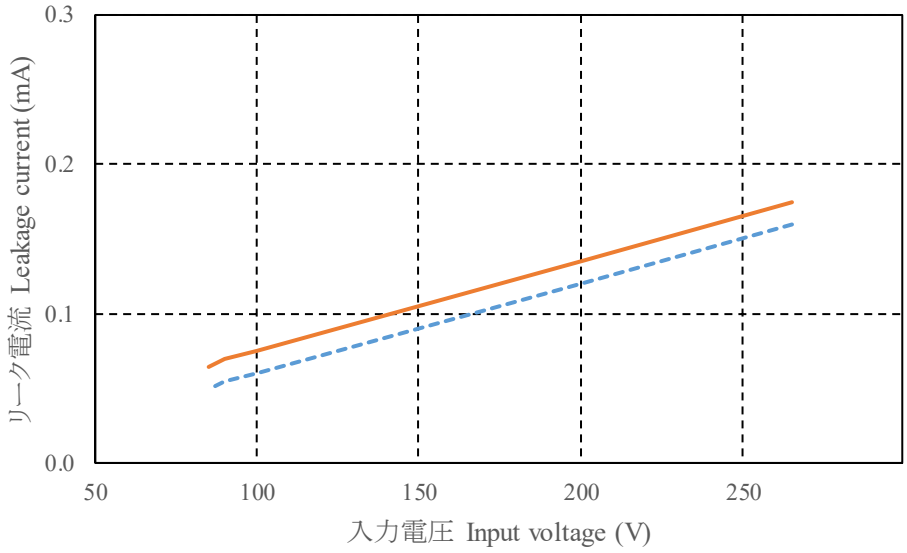
2-14. リーク電流特性 Leakage current characteristics

条件 Condition
Iout : 0%
100%
Istb : 100%
空冷方式 : 自然空冷
Cooling : Convection cooling

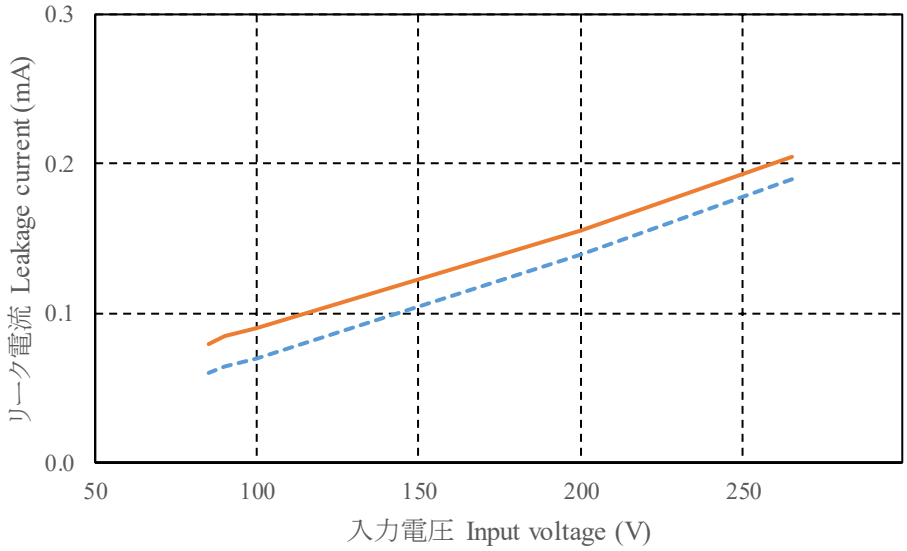
Ta : 25℃

24V

f = 50Hz



f = 60Hz

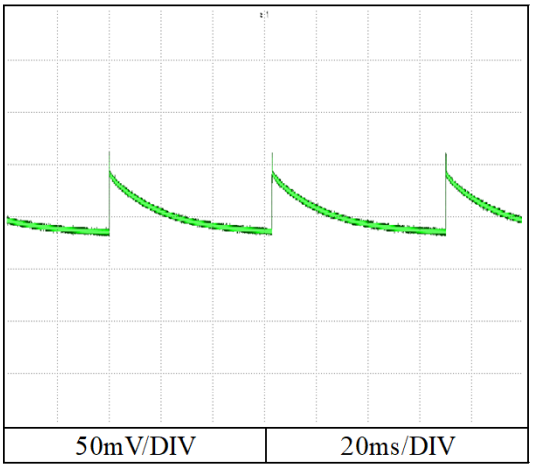


2-15.　出力リップル、ノイズ波形　Output ripple and noise waveform

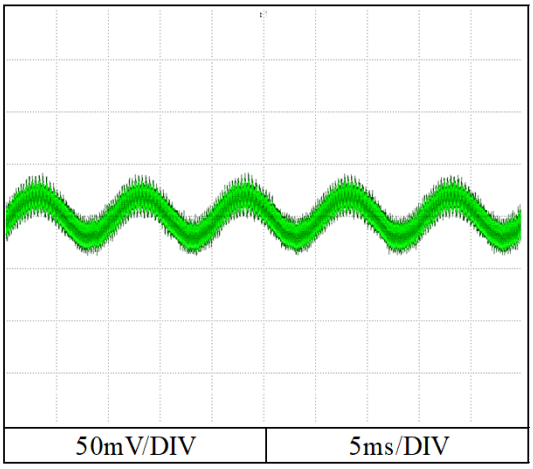
条件　Vin : 100VAC
Condition　Iout : 100%
Istb : 100%
空冷方式 : 自然空冷
Cooling : Convection cooling
Ta : 25℃

24V

Iout : 0%

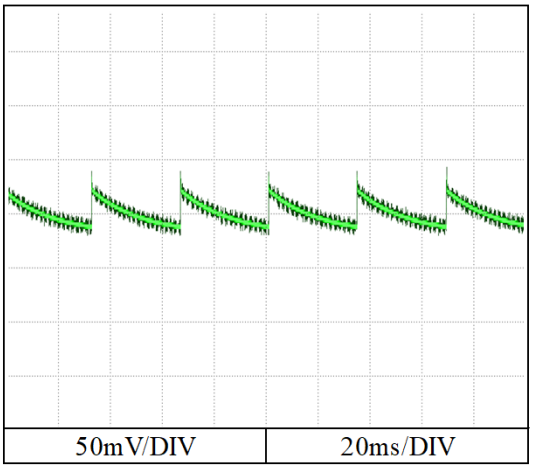


Iout : 100%

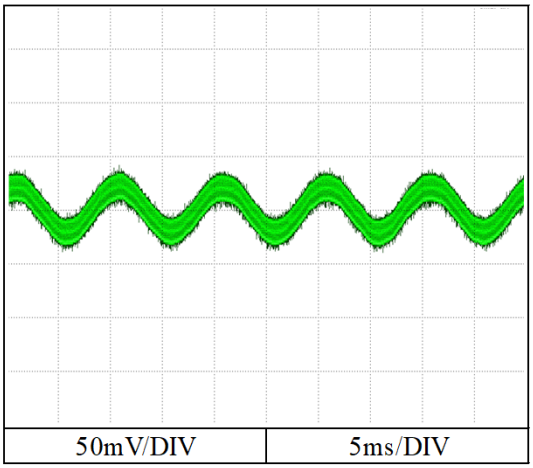


30V

Iout : 0%



Iout : 100%

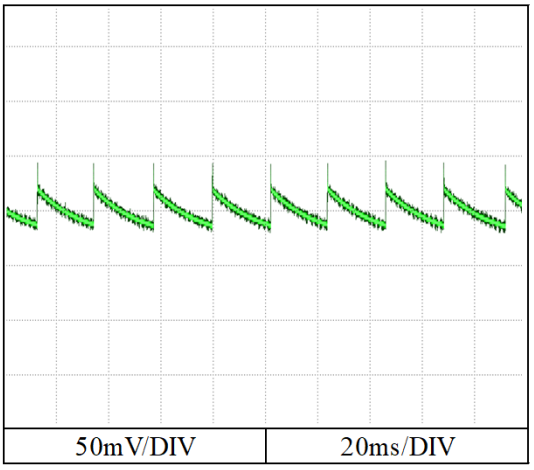


2-15.　出力リップル、ノイズ波形　Output ripple and noise waveform

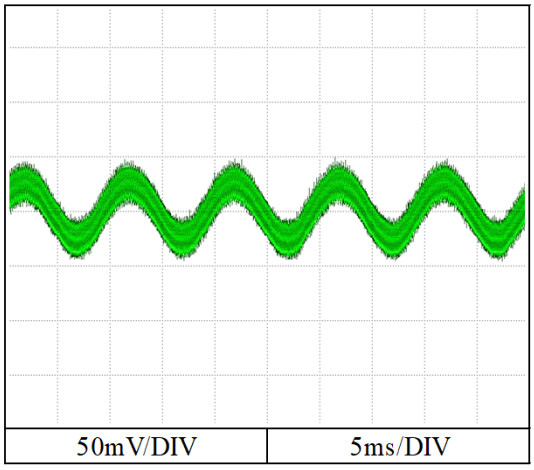
条件　Vin : 100VAC
Condition　Iout : 100%
Istb : 100%
空冷方式 : 自然空冷
Cooling : Convection cooling
Ta : 25℃

36V

Iout : 0%

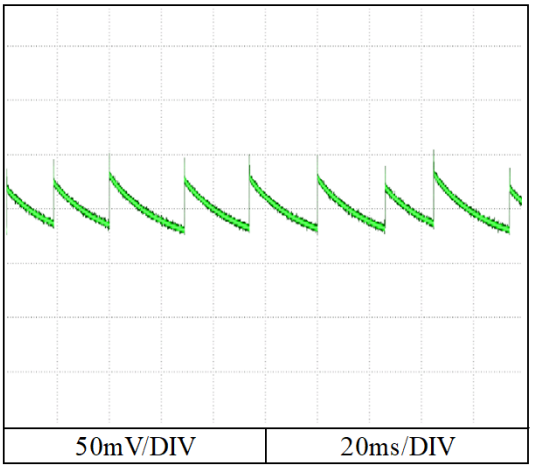


Iout : 100%

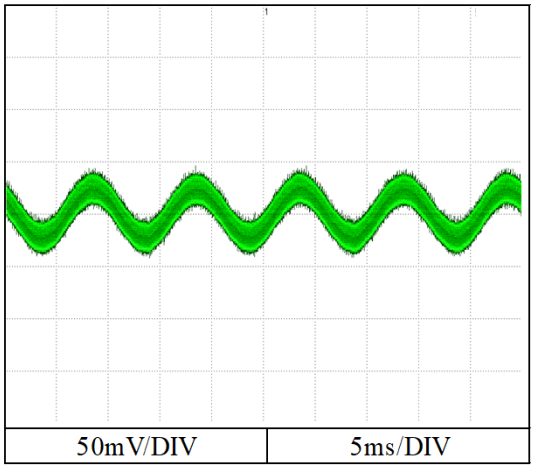


48V

Iout : 0%



Iout : 100%



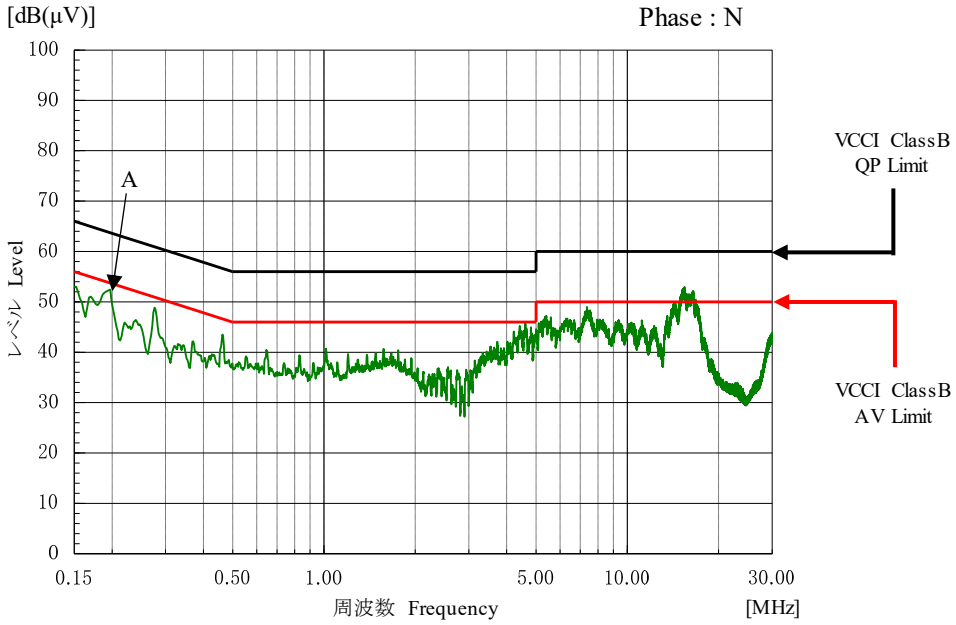
2-16. EMI特性　Electro-Magnetic Interference characteristics

雑音端子電圧　Conducted Emission

条件　Condition
Vin : 230VAC
Iout : 100%
Istb : 100%
空冷方式 : 自然空冷
Cooling : Convection cooling
Ta : 25℃

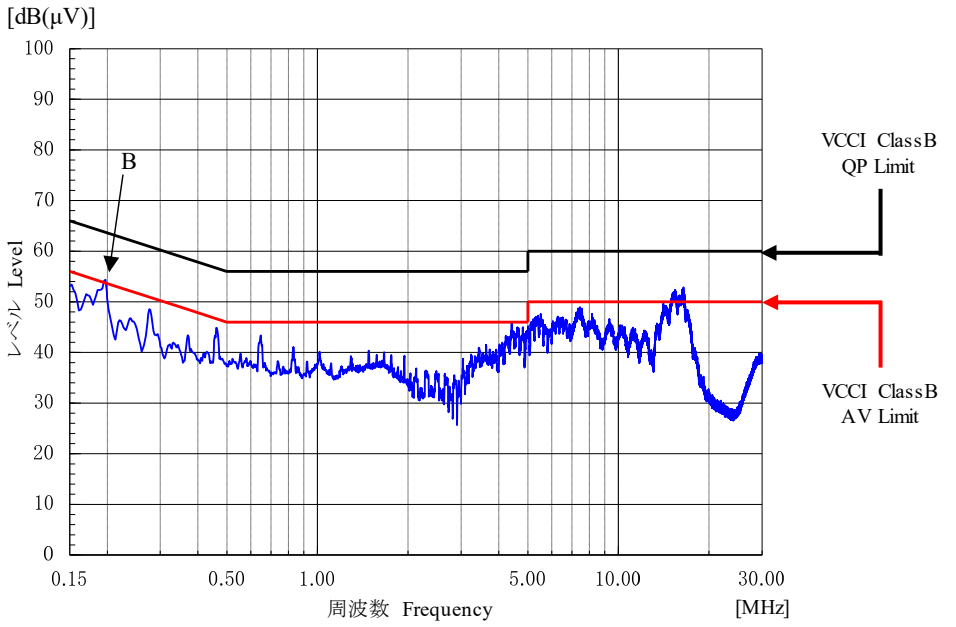
24V

Ref. Data	Point A (0.2MHz)	
	Limit (dB)	Measure (dB)
QP	63.7	51.2
AV	53.7	49.1



Phase : L

Ref. Data	Point B (0.2MHz)	
	Limit (dB)	Measure (dB)
QP	63.7	53.1
AV	53.7	49.3



EN55011-B,EN55032-B,FCC-Bの限界値はVCCI class Bの限界値と同じ
Limit of EN55011-B,EN55032-B,FCC-B are same as its VCCI class B.

2-16. EMI特性　Electro-Magnetic Interference characteristics

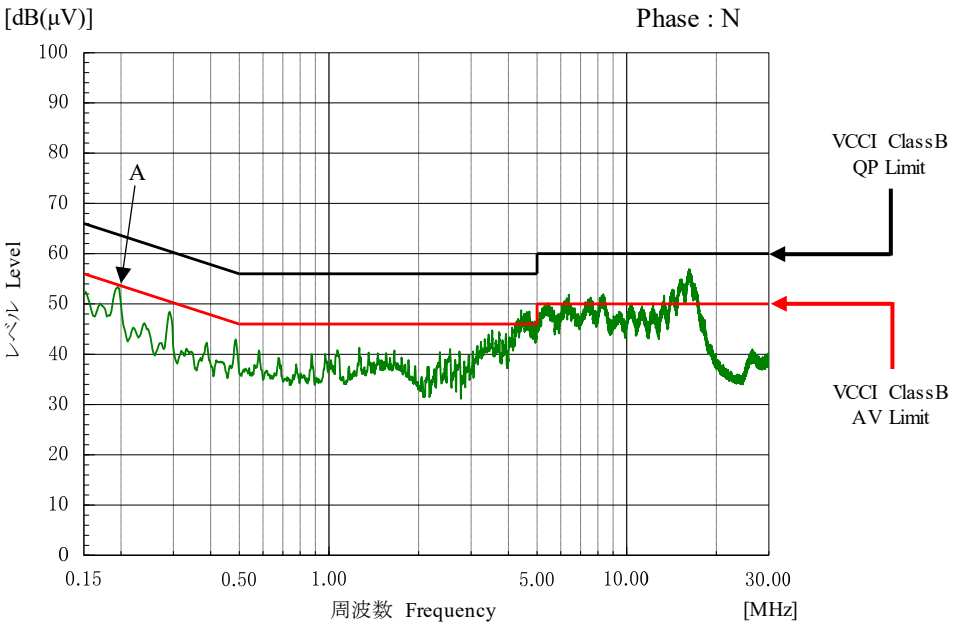
雑音端子電圧　Conducted Emission

条件　Condition

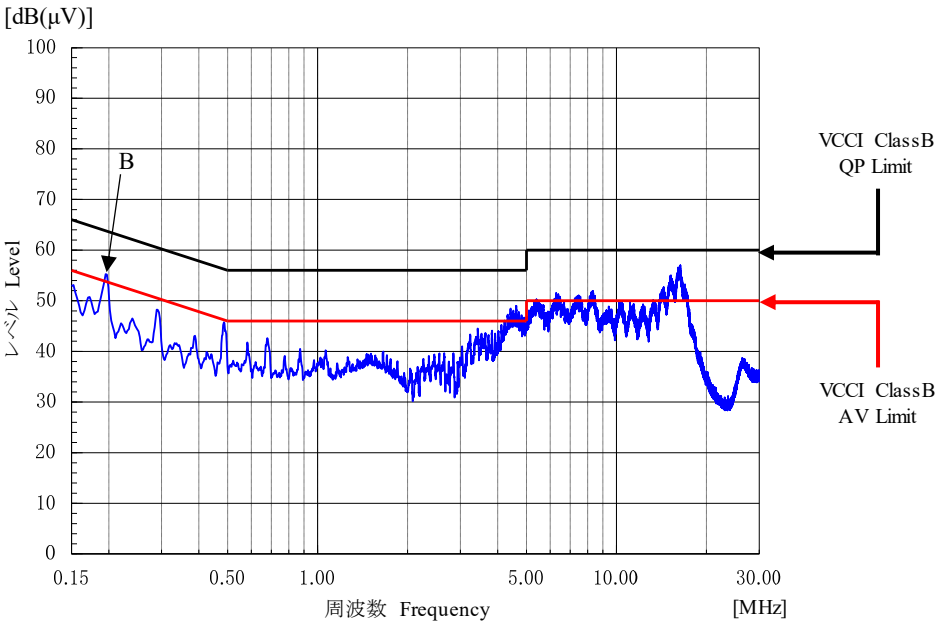
Vin : 230VAC
Iout : 100%
Istb : 100%
空冷方式 : 自然空冷
Cooling : Convection cooling
Ta : 25℃

30V

Ref. Data	Point A (0.2MHz)	
	Limit (dB)	Measure (dB)
QP	63.7	51.5
AV	53.7	48.4



Ref. Data	Point B (0.2MHz)	
	Limit (dB)	Measure (dB)
QP	63.7	52.9
AV	53.7	48.7



EN55011-B,EN55032-B,FCC-Bの限界値はVCCI class Bの限界値と同じ
Limit of EN55011-B,EN55032-B,FCC-B are same as its VCCI class B.

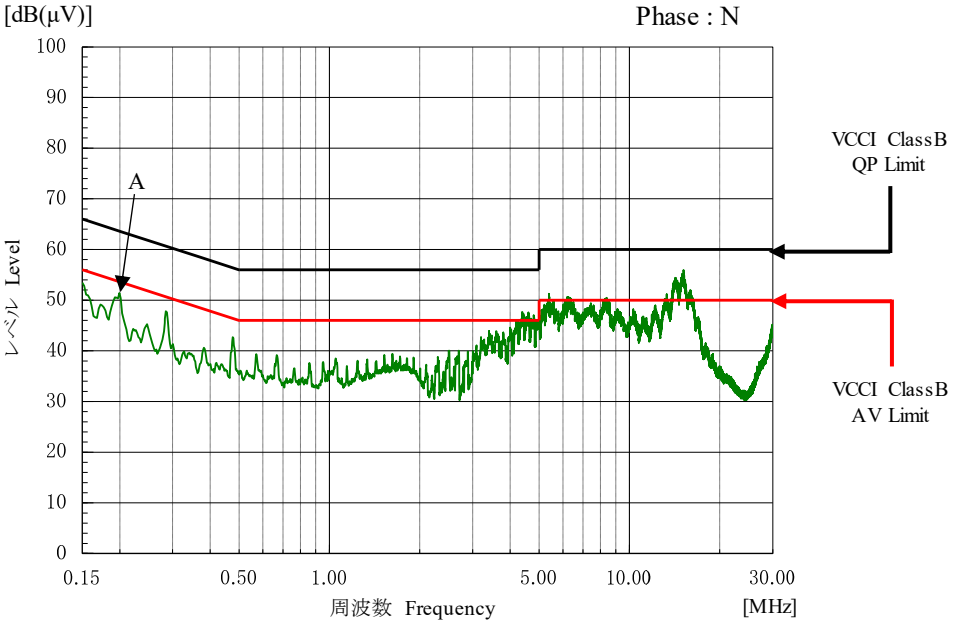
2-16. EMI特性　Electro-Magnetic Interference characteristics

雑音端子電圧　Conducted Emission

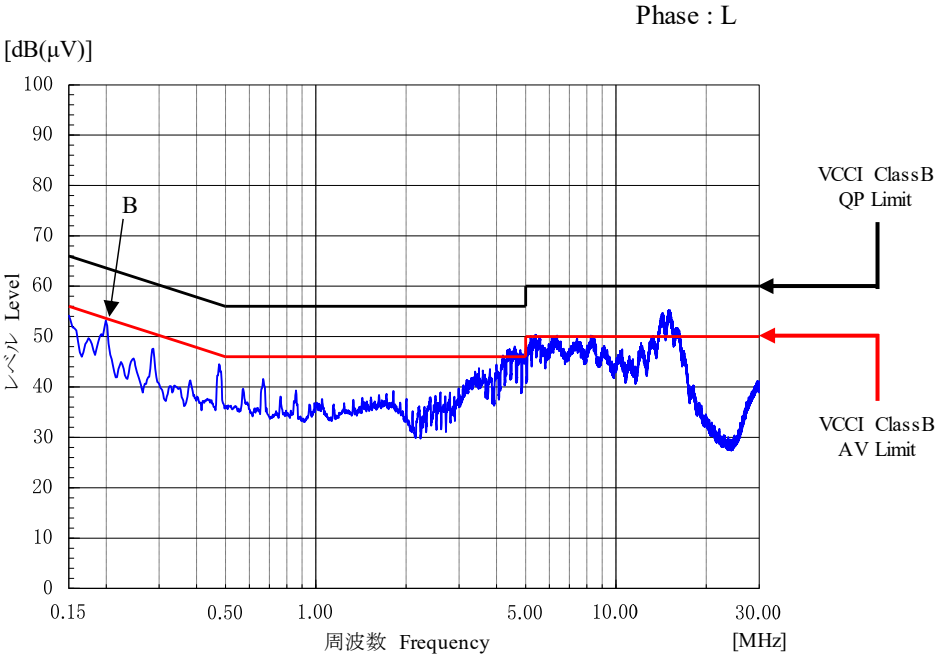
条件　Vin : 230VAC
Condition　Iout : 100%
Istb : 100%
空冷方式 : 自然空冷
Cooling : Convection cooling
Ta : 25℃

36V

Ref. Data	Point A (0.2MHz)	
	Limit (dB)	Measure (dB)
QP	63.7	50.1
AV	53.7	47.8



Ref. Data	Point B (0.2MHz)	
	Limit (dB)	Measure (dB)
QP	63.7	51.7
AV	53.7	48.1



EN55011-B,EN55032-B,FCC-Bの限界値はVCCI class Bの限界値と同じ
Limit of EN55011-B,EN55032-B,FCC-B are same as its VCCI class B.

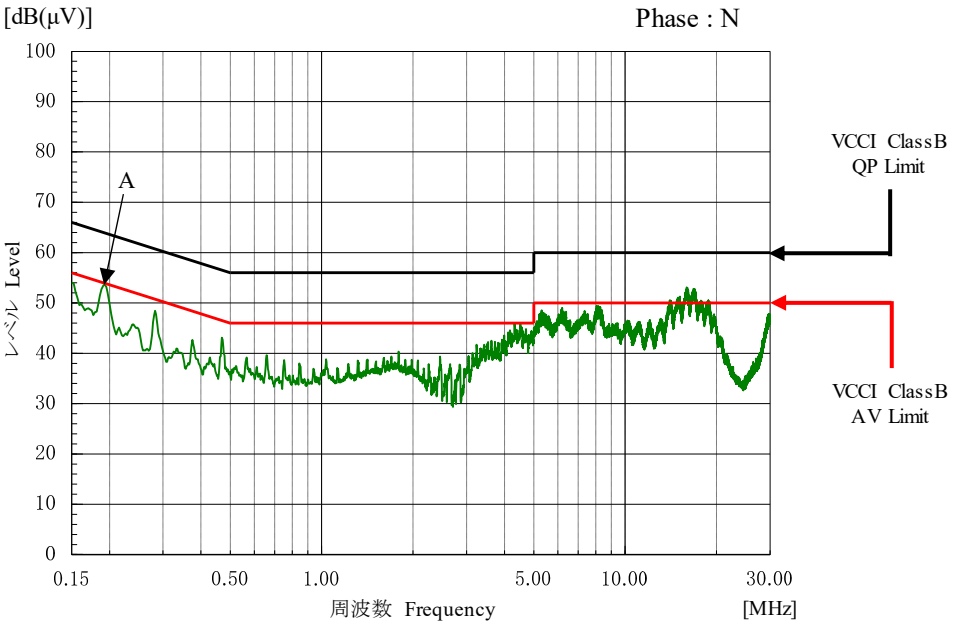
2-16. EMI特性　Electro-Magnetic Interference characteristics

雑音端子電圧　Conducted Emission

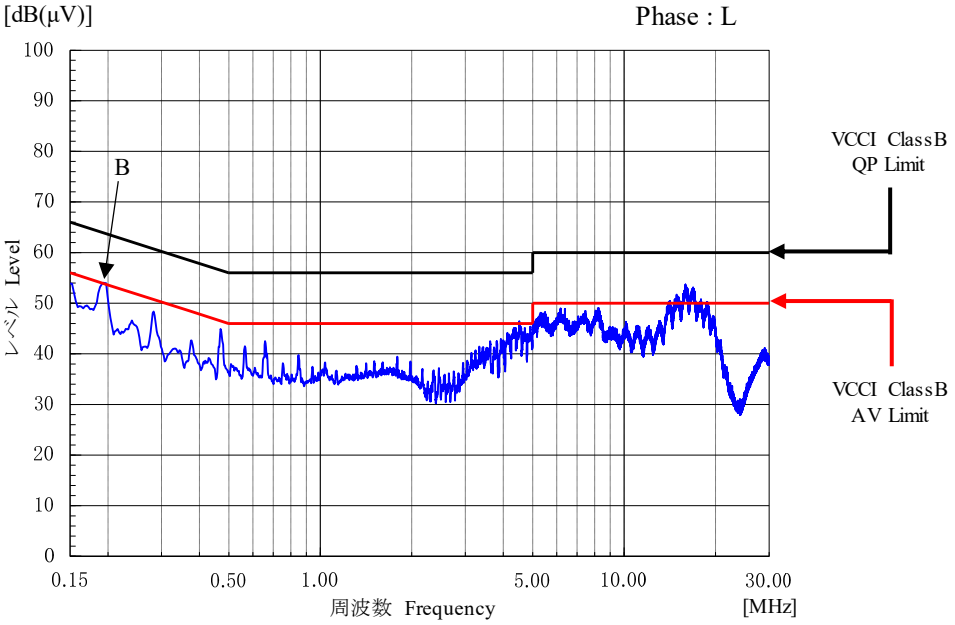
条件　Vin : 230VAC
Condition　Iout : 100%
Istb : 100%
空冷方式 : 自然空冷
Cooling : Convection cooling
Ta : 25℃

48V

Ref. Data	Point A (0.2MHz)	
	Limit (dB)	Measure (dB)
QP	63.7	50.6
AV	53.7	48.5



Ref. Data	Point B (0.2MHz)	
	Limit (dB)	Measure (dB)
QP	63.7	52.5
AV	53.7	48.7

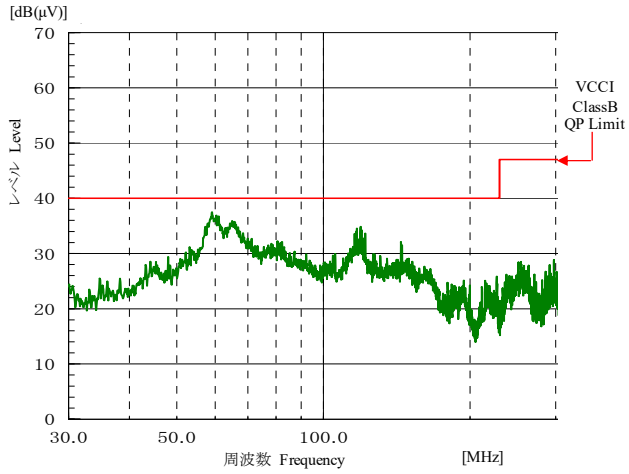


EN55011-B,EN55032-B,FCC-Bの限界値はVCCI class Bの限界値と同じ
Limit of EN55011-B,EN55032-B,FCC-B are same as its VCCI class B.

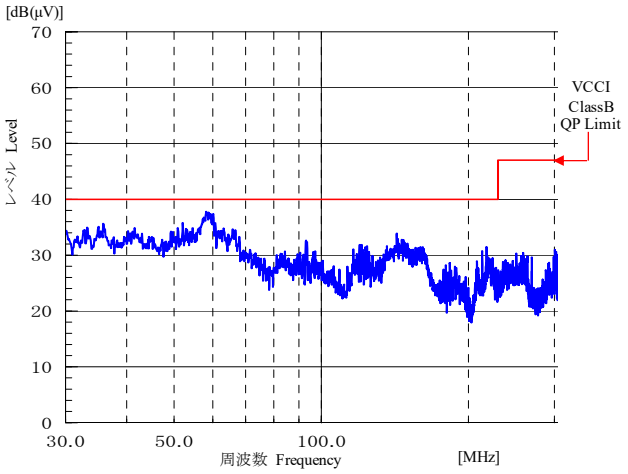
雑音電界強度　Radiated Emission

条件　Vin : 230VAC
Condition　Iout : 100%
Istb : 100%
空冷方式 : 自然空冷
Cooling : Convection cooling
Ta : 25℃

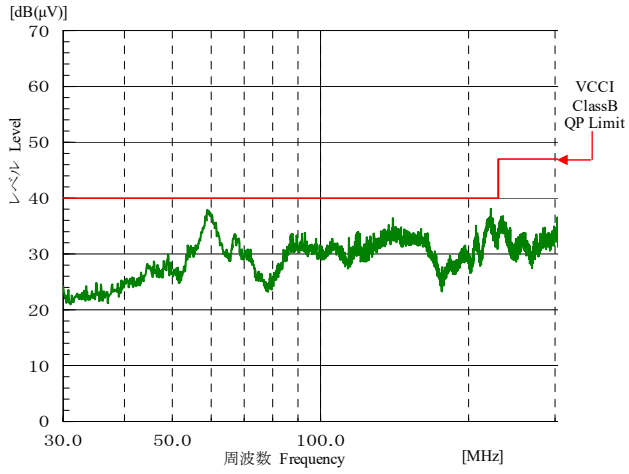
24V　Horizontal



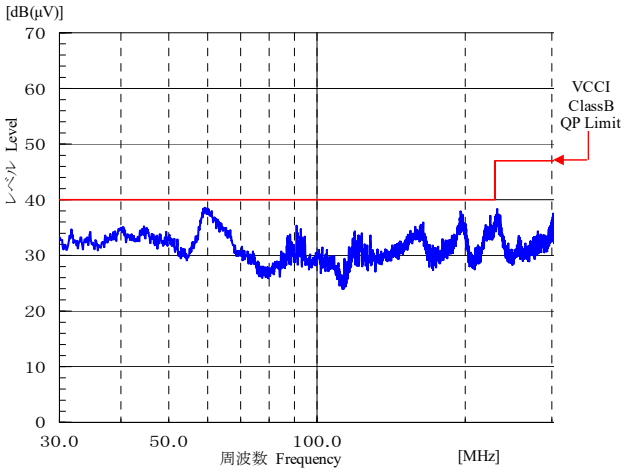
Vertical



30V　Horizontal



Vertical

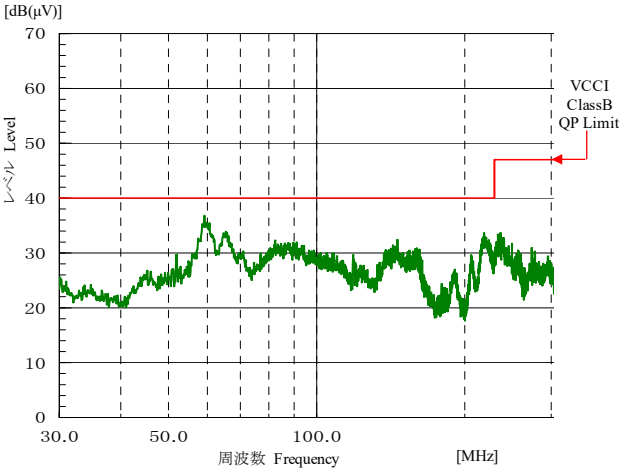


EN55011-B,EN55032-Bの限界値はVCCI class Bの限界値と同じ
Limit of EN55011-B,EN55032-B are same as its VCCI class B.
表示はピーク値
Indication is peak values.

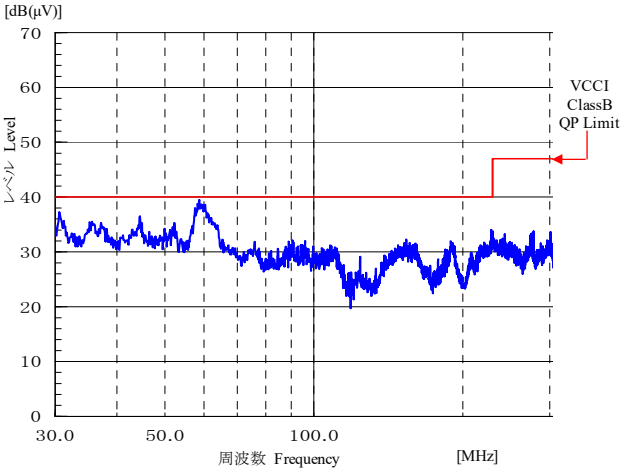
雑音電界強度　Radiated Emission

条件	Vin :	230VAC
Condition	Iout :	100%
	Istb :	100%
	空冷方式 :	自然空冷
	Cooling :	Convection cooling
	Ta :	25℃

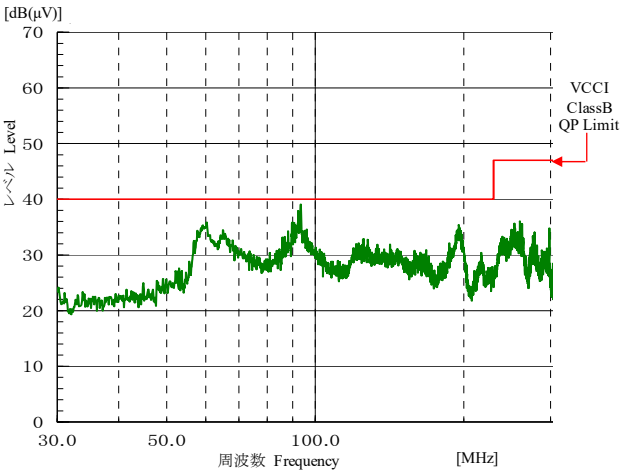
36V　Horizontal



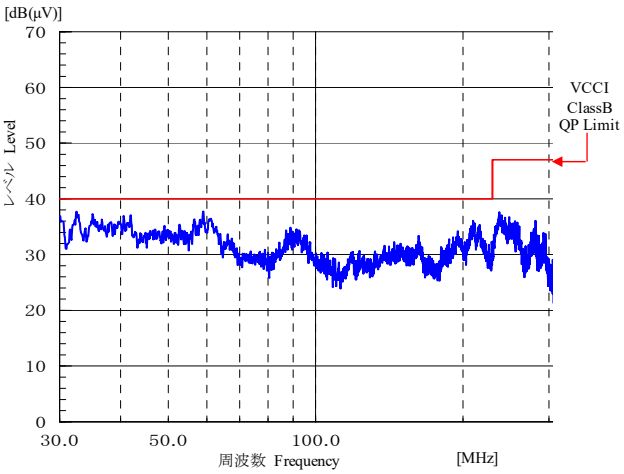
Vertical



48V　Horizontal



Vertical



EN55011-B,EN55032-Bの限界値はVCCI class Bの限界値と同じ

Limit of EN55011-B,EN55032-B are same as its VCCI class B.

表示はピーク値

Indication is peak values.