

## Table of contents(目錄)

	Paper
1-1.Line&Load Regulation And Temperature Chafaile Character (輸入& 負荷及溫度變動特性)-----	4
1-2.Ripple And Noise Character(紋波特性)-----	5~6
1-3.Over-Voltage Protection (過電壓保護特性)-----	7
1-4.Over-Current Protection (過電流保護特性)-----	8
1-5.Dynamic ripple Character(動態負載特性)-----	9
1-6.Efficiency Character(效率特性)-----	10
1-7.Input&Load Change Character(輸入& 負荷變動特性)-----	11
1-8.Inrush Current (浪涌電流)-----	12
1-9.Turn On Delay(開機爬升延遲時間)-----	13
2-1.Hold Up Time Character (保持時間)-)	14
2-2.Low Vac Shut Off (輸入欠壓關斷特性)-----	15
2-3. Over Shoot(過沖特性)-----	16
2-4.Under Shoot(下沖特性)-----	17
2-5.Leak Current (漏電流特性)-----	18

Evaluation Method 评价方法

Circuit used for determination 特性電路圖

Circuit 1 特性回路1

Line&Load Regulation And Temperature Chafaile Character (輸入&負荷及溫度變動特性)

Over-Voltage Protection (過電壓保護特性)

Over-Current Protection (過電流保護特性)

Dynamic ripple Character(動態負載特性)

Efficiency Character(效率特性)

Input&Load Change Character(輸入&負荷變動特性)

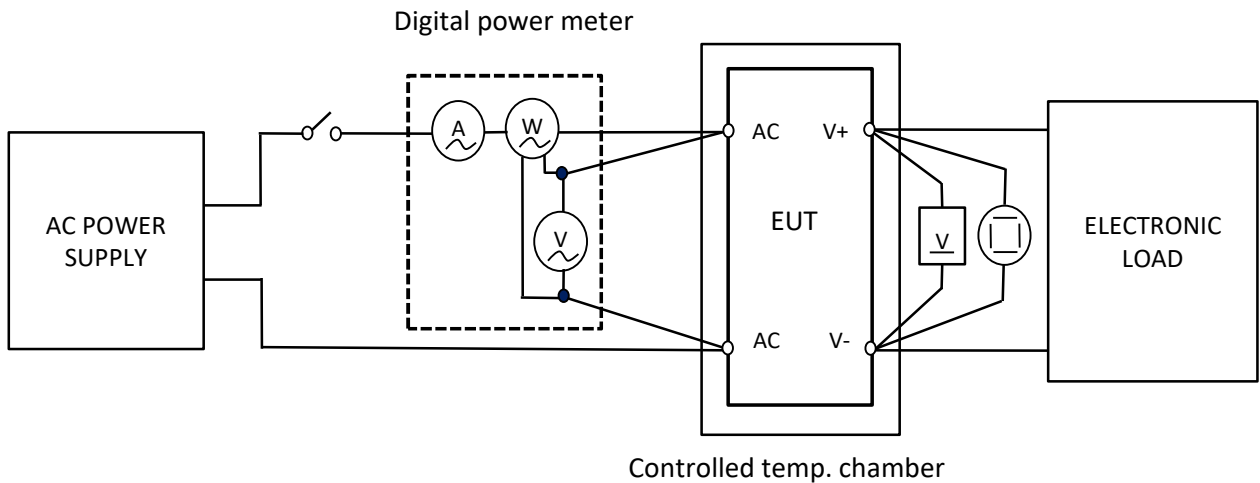
Turn On Delay(開機爬升延遲時間)

Hold Up Time Character (保持時間)

Low Vac Shut Off (輸入欠壓關斷特性)

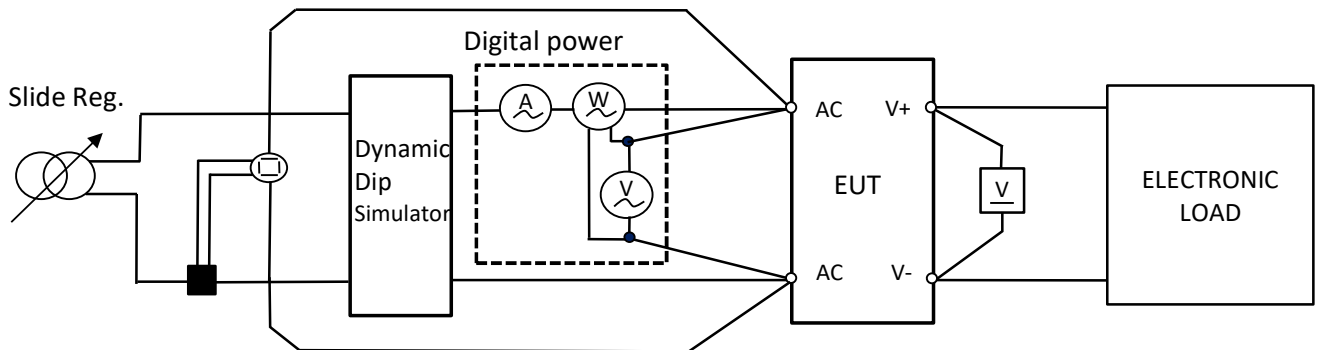
Over Shoot(過沖特性)

Under Shoot(下沖特性)

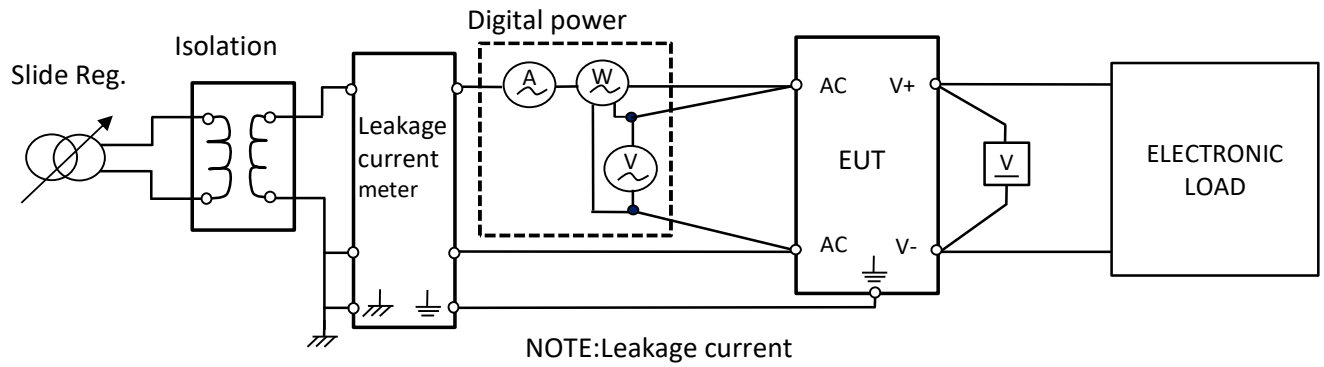


Circuit 2 特性回路2

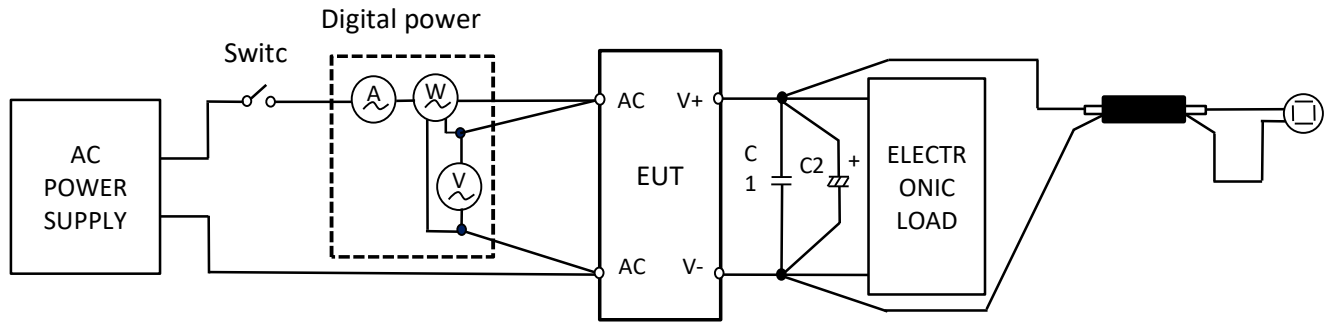
Inrush Current (浪涌電流)



Circuit 3 特性回路3  
Leak Current (漏電流特性)



Circuit 4 特性回路4  
Ripple And Noise Character(紋波特性)



C1 : 0.1 $\mu$ F CERAMICS CAPACITOR  
 C2 : 100 $\mu$  100V ALUMINUM CAPACITOR  
 THE BANDWIDTH OF OSCILLOSCOPE IS SET WITH  
 20MHz

1.ELECTRICAL FUNCTION Character(電氣特性)

1-1.Line&Load Regulation And Temperature Chafaile Character (輸入&負荷及溫度變動特性)

※ Character Condition(特性條件):

1	I/P Voltage(Vac)(輸入電壓)	90Vac/100Vac/240Vac/264Vac
2	I/P Frequency(Hz)(輸入頻率)	47Hz ~63Hz
3	Output Load(輸出負載)	0%,25%,50%,75%,100% Of Full Load
4	Regulation(調整率)	Load Regulation: $\leq 5\%$ ; Line Regulation $\leq 2\%$
5	Ambient Temp.(°C)(環境溫度)	25°C
6	Sample Size(取樣數)	1PCS

Output voltage	24.0V
----------------	-------

※ Character Data(特性數據):

O/P \ I/P	90Vac/63Hz	100Vac/60Hz	240Vac/50Hz	264Vac/47Hz	Line Regulation $\leq 2\%$
0%	23.81V	23.81V	23.81V	23.811V	0.00%
25%	23.804V	23.804V	23.804V	23.803V	0.00%
50%	23.794V	23.795V	23.795V	23.795V	0.00%
75%	23.781V	23.783V	23.788V	23.788V	0.03%
100%	23.757V	23.764V	23.781V	23.781V	0.10%
Load Regulation: $\leq 5\%$	0.22%	0.19%	0.12%	0.13%	

1-2.1 Ripple And Noise Character (紋波與雜訊)

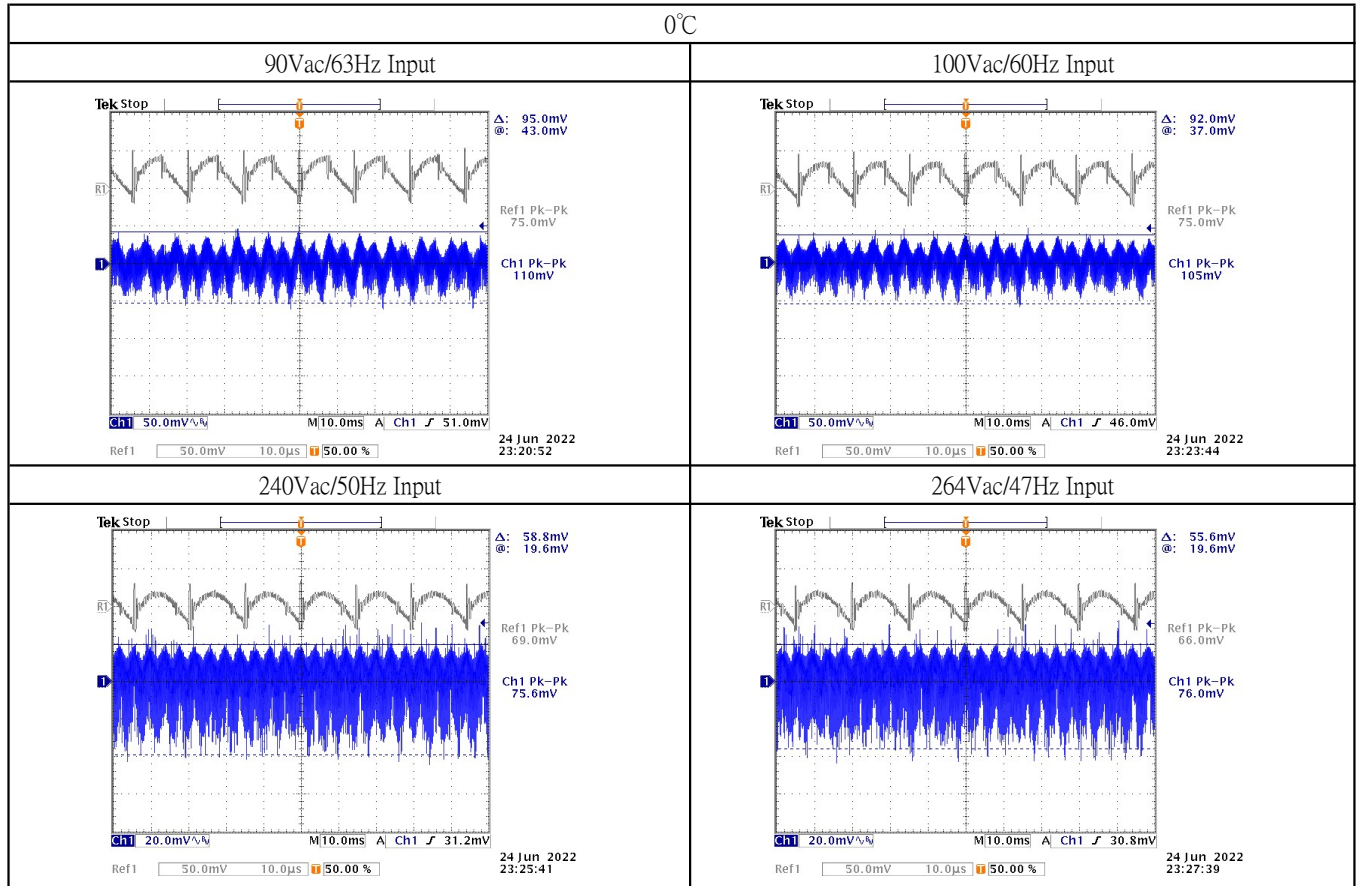
※ Character Condition(特性條件):

1	I/P Voltage(Vac)(輸入電壓)	90Vac/100Vac/240Vac/264Vac
2	I/P Frequency(Hz)(輸入頻率)	47Hz ~63Hz
3	Output Load(輸出負載)	Full Load
4	Ambient Temp.(°C)(環境溫度)	0°C
5	Sample Size(取樣數)	1PCS

※ Character Data(特性數據):

I/P	90Vac/63Hz		100Vac/60Hz		240Vac/50Hz		264Vac/47Hz	
ITEM	Ripple	Noise	Ripple	Noise	Ripple	Noise	Ripple	Noise
0°C	75.0mV	110.0mV	75.0mV	105.0mV	69.0mV	75.6mV	66.0mV	76.0mV

※ Character Waveform (特性波形):



1-2.3 Ripple And Noise Character (紋波與雜訊)

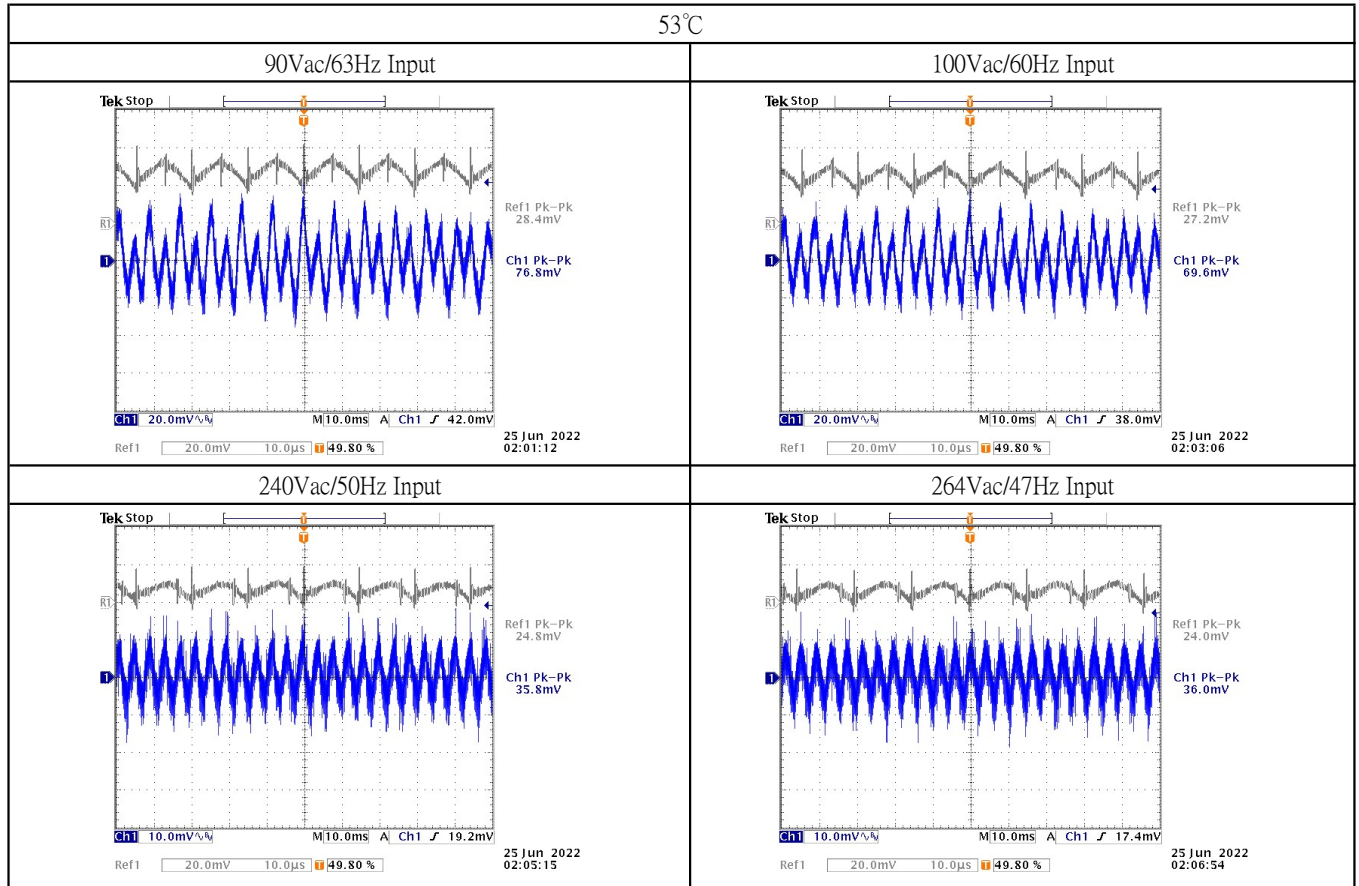
※ Character Condition(特性條件):

1	I/P Voltage(Vac)(輸入電壓)	90Vac/100Vac/240Vac/264Vac
2	I/P Frequency(Hz)(輸入頻率)	47Hz ~63Hz
3	Output Load(輸出負載)	Full Load
4	Ambient Temp.(°C)(環境溫度)	53°C
5	Sample Size(取樣數)	1PCS

※ Character Data(特性數據):

I/P	90Vac/63Hz		100Vac/60Hz		240Vac/50Hz		264Vac/47Hz	
ITEM	Ripple	Noise	Ripple	Noise	Ripple	Noise	Ripple	Noise
53°C	28.4mV	76.8mV	27.2mV	69.6mV	24.8mV	35.8mV	24.0mV	36.0mV

※ Character Waveform (特性波形):



1-3.Over-Voltage Protection(過電壓保護特性)

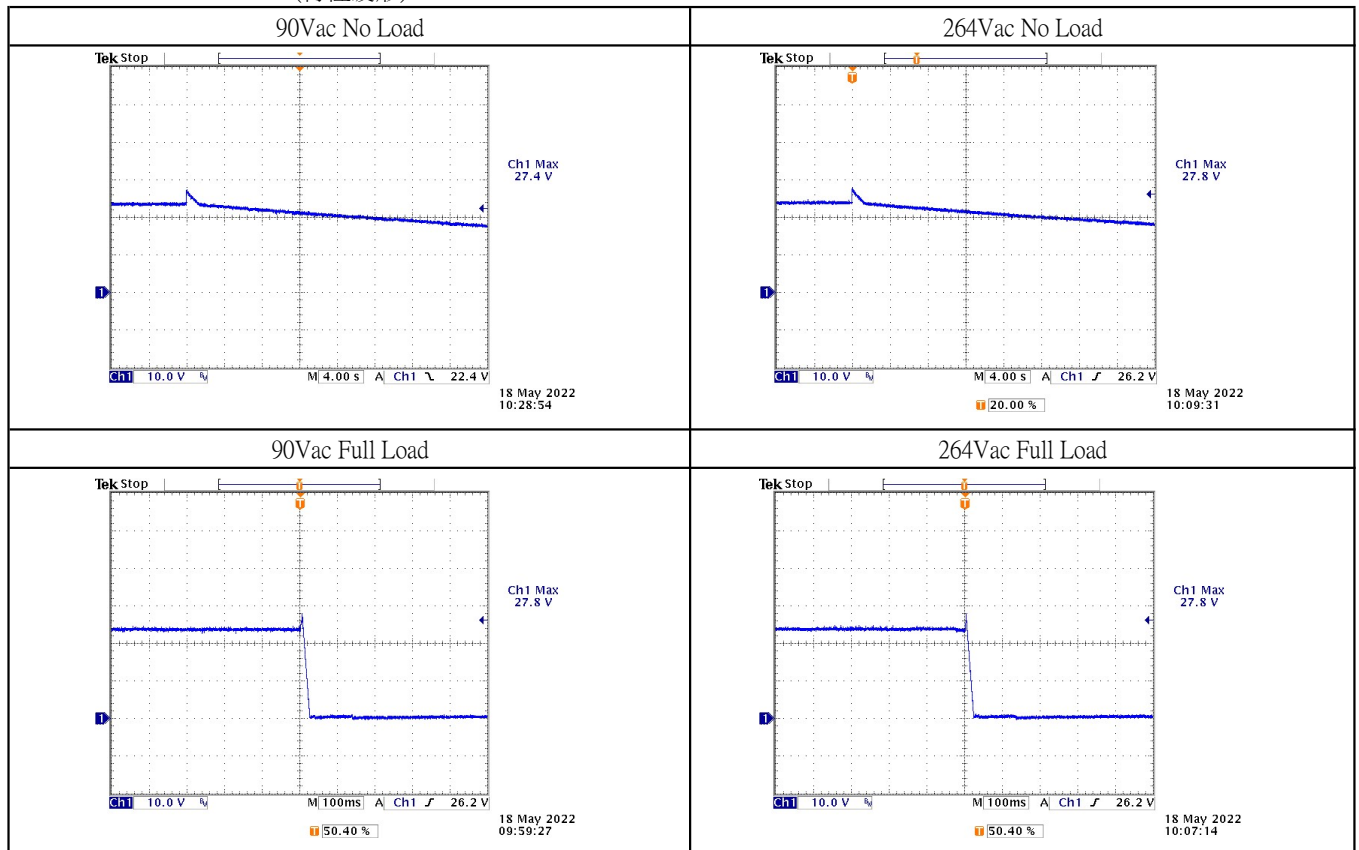
※ Character Condition(特性條件):

1	I/P Voltage(Vac)(輸入電壓)	90Vac/264Vac
2	I/P Frequency(Hz)(輸入頻率)	47Hz /63Hz
3	Output Load(輸出負載)	No/Full Load
4	Ambient Temp.(°C)(環境溫度)	25°C
5	Sample Size(取樣數)	1PCS

※ Character Data(特性數據):

O/P	No Load		Full Load	
I/P	90Vac/63Hz	264Vac/47Hz	90Vac/63Hz	264Vac/47Hz
Character Result	27.4V	27.8V	27.8V	27.8V

※ Character Waveform (特性波形):



1-4.Over-Current Protection(過電流保護特性)

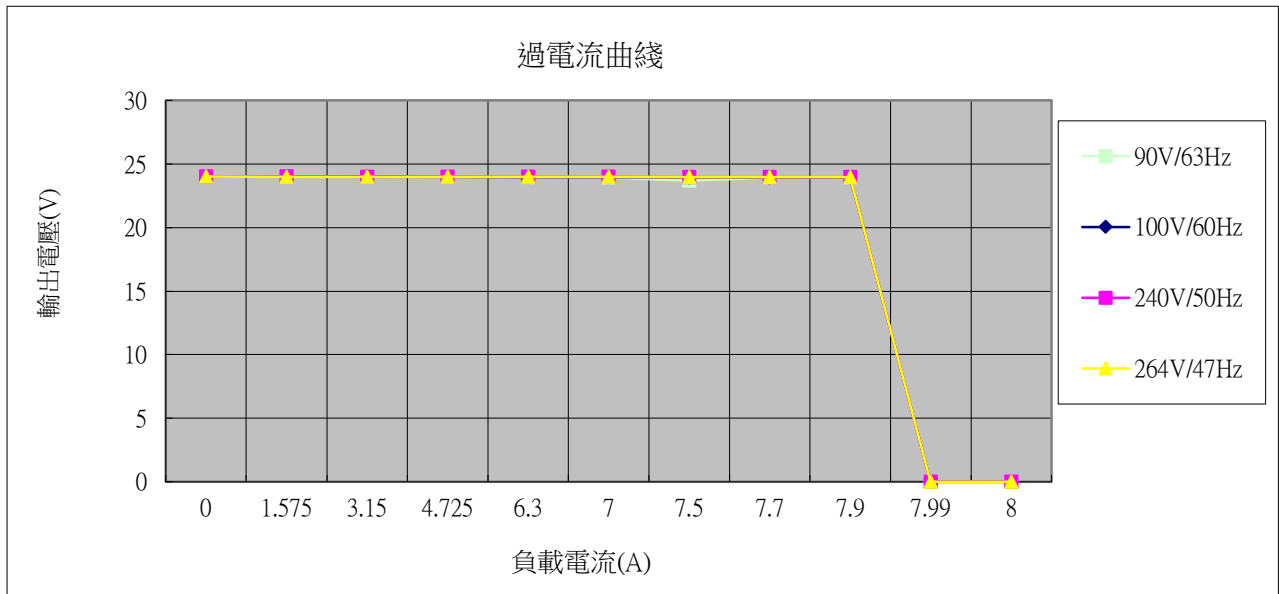
※ Character Condition(特性條件):

1	I/P Voltage(Vac)(輸入電壓)	90Vac/100Vac/240Vac/264Vac
2	I/P Frequency(Hz)(輸入頻率)	47Hz ~63Hz
3	Output Load(輸出負載)	Full Load
4	Ambient Temp.(°C)(環境溫度)	25°C
5	Sample Size(取樣數)	1PCS

※ Character Data(特性數據):

I/P	90V/63Hz	100V/60Hz	240V/50Hz	264V/47Hz
O.C.P點	7.99A	7.99A	7.98A	7.98A

I/P	90V/63Hz										
Voltage(V)	24.027	24.022	24.016	24.003	23.98	23.965	23.702	23.947	23.942	0	0
Current(A)	0	1.575	3.15	4.725	6.3	7	7.5	7.7	7.9	7.99	8
I/P	100V/60Hz										
Voltage(V)	24.025	24.02	24.015	24.005	23.986	23.973	23.964	23.959	23.953	0	0
Current(A)	0	1.575	3.15	4.725	6.3	7	7.5	7.7	7.9	7.99	8
I/P	240V/50Hz										
Voltage(V)	24.02	24.015	24.011	24.006	23.998	23.991	23.987	23.986	23.984	0	0
Current(A)	0	1.575	3.15	4.725	6.3	7	7.5	7.7	7.9	7.98	8
I/P	264V/47Hz										
Voltage(V)	24.017	24.012	24.008	24.002	23.996	23.989	23.985	23.983	23.982	0	0
Current(A)	0	1.575	3.15	4.725	6.3	7	7.5	7.7	7.9	7.98	8





1-5. Dynamic ripple Character(動態負載特性)

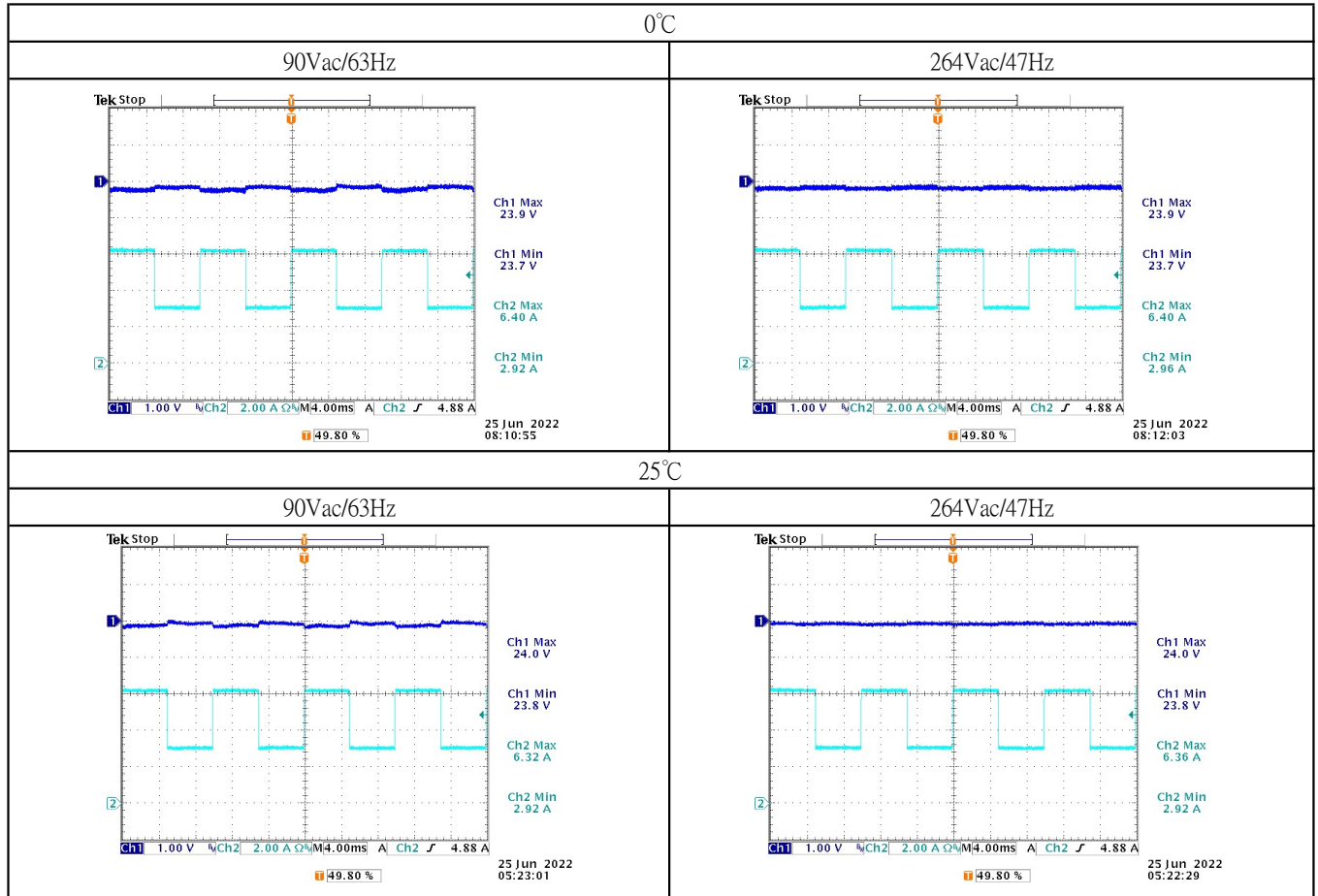
※ Character Condition(特性條件):

1	I/P Voltage(Vac)(輸入電壓)	90Vac/264Vac
2	I/P Frequency(Hz)(輸入頻率)	47Hz /63Hz
3	Output Load(輸出負載)	50%-100% Full Load, TH=5ms, TL=5ms, Slew rate=0.1A/us
4	Ambient Temp.(°C)(環境溫度)	0°C /25°C
5	Sample Size(取樣數)	1PCS

※ Character Data(特性數據):

I/P	90Vac/63Hz		264Vac/47Hz	
O/P	Max	Min	Max	Min
0°C	23.9V	23.7V	23.9V	23.7V
25°C	24.0V	23.8V	24.0V	23.8V

※ Character Waveform (特性波形):



1-6.Efficiency Character(效率特性)

※ Character Condition(特性條件):

1	I/P Voltage(Vac)(輸入電壓)	115Vac/230Vac
2	I/P Frequency(Hz)(輸入頻率)	50Hz / 60Hz
3	Output Load(輸出負載)	0%,10%,25%,50%,75%,100% of Full Load
4	Ambient Temp.(°C)(環境溫度)	25°C
5	Sample Size(取樣數)	1PCS
6	Output Load(輸出負載)	6.3A

※ Character Data(特性數據):

使用線材	N/A
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Efficiency							Stand by consumption		
Load	10% 25% 50% 75% 100%						0%		
I/P	115Vac/60Hz			230Vac/50Hz			Input 115V/60Hz	230V/50HZ	
O/P Load	Pin (W)	Pout (W)	Efficiency (%)	Pin (W)	Pout (W)	Efficiency (%)	0.14W	0.23W	
10%	0.63A	16.494	15.279	92.63%	16.69	15.279			91.54%
25%	1.58A	41.24	38.184	92.59%	40.92	38.183			93.31%
50%	3.15A	82.82	76.325	92.16%	81.7	76.325			93.42%
75%	4.73A	125.29	114.397	91.31%	122.51	114.425			93.40%
100%	6.3A	168.5	152.384	90.44%	164.77	152.454			92.53%
Average				91.62%			93.16%		

1-7.Input&Load Change Character(輸入& 負荷變動特性)

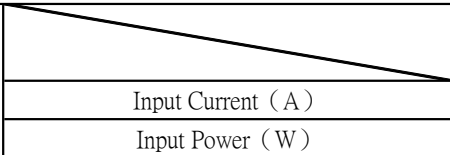
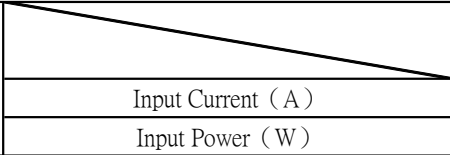
※ Character Condition(特性條件) :

1	I/P Voltage(Vac)(輸入電壓)	90Vac~264Vac
2	I/P Frequency(Hz)(輸入頻率)	47Hz ~63Hz
3	Output Load(輸出負載)	No Load and Full Load
4	Ambient Temp.(°C)(環境溫度)	25°C
5	Sample Size(取樣數)	1PCS
6		

※ Character Equipment(特性設備) :

ITEM	Equipment Item(設備)	Model No. / Manufacturer(製造商和型號)
1	AC Source(變頻器)	ALL POWER/PG-1005N
2	Power Meter(功率表)	YOKOGAWA/WT310
3	DC Load(DC負載)	ITECH/IT8512+

※ Character Data(特性數據) :

Input change with no load			
No Load		Input Condition	
		90V/63Hz	264Vac/47Hz
		Input Current ( A )	0.0382
Input Power ( W )	0.009	0.465	
Input change with full load			
Full Load		Input Condition	
		90V/63Hz	264Vac/47Hz
		Input Current ( A )	3.121
Input Power ( W )	173.66	165.71	

1-8.Inrush Current (浪涌電流)

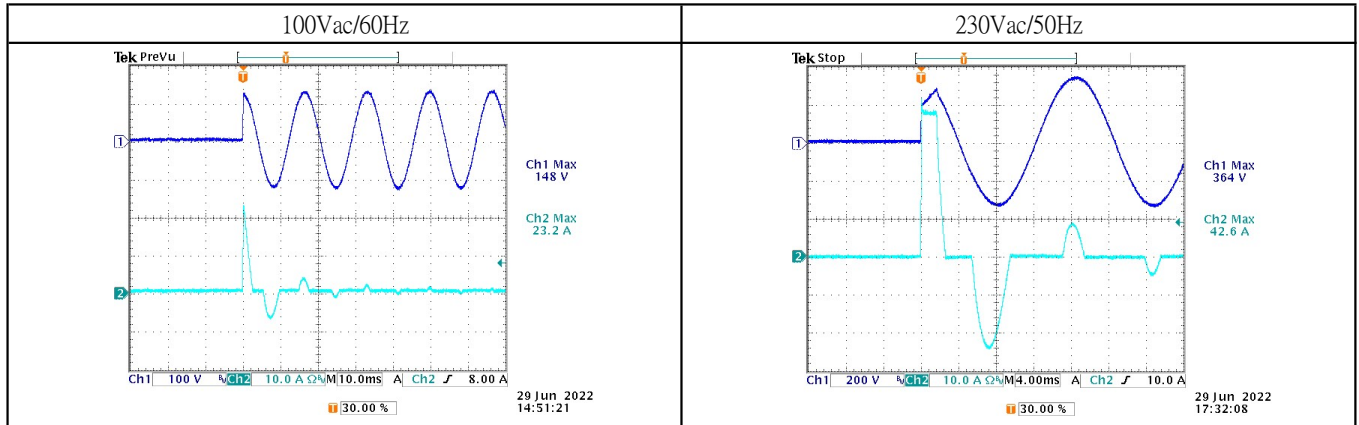
※ Character Condition(特性條件):

1	I/P Voltage(Vac)(輸入電壓)	100Vac/230Vac
2	I/P Frequency(Hz)(輸入頻率)	50Hz /60Hz
3	Output Load(輸出負載)	Full Load
4	Ambient Temp.(°C)(環境溫度)	25°C
5	Sample Size(取樣數)	1PCS

※ Character Data(特性數據):

Inrush Current		
O/P	Full Load	Full Load
I/P I(A)	100Vac/60Hz	230Vac/50Hz
Character Result	23.2A	42.6A

※ Character Waveform (特性波形):



1-9.Turn On Delay(開機爬升延遲時間)

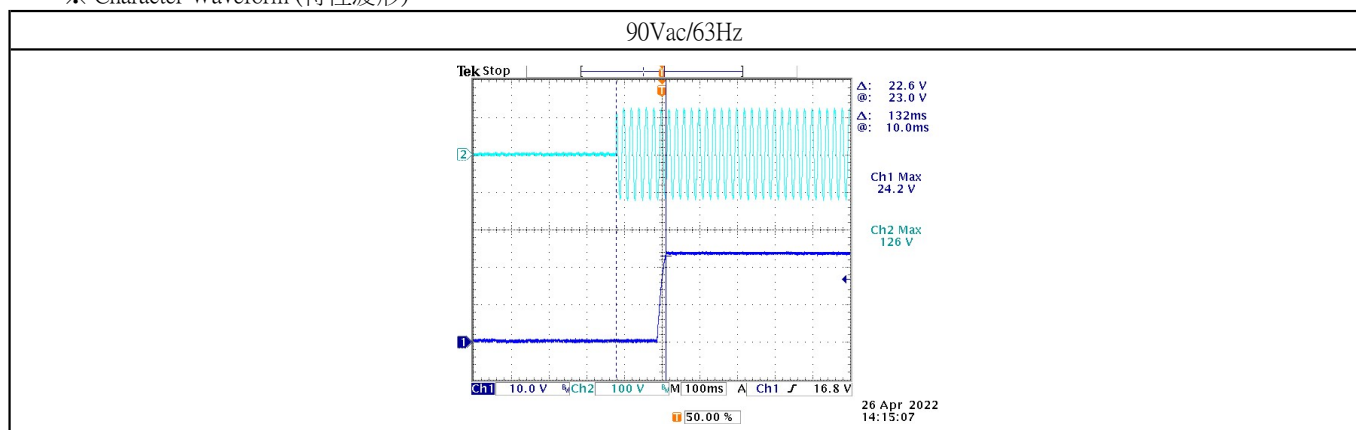
※ Character Condition(特性條件):

1	I/P Voltage(Vac)(輸入電壓)	90Vac
2	I/P Frequency(Hz)(輸入頻率)	63Hz
3	Output Load(輸出負載)	Full Load
4	Ambient Temp.(°C)(環境溫度)	25°C
5	Sample Size(取樣數)	1PCS

※ Character Data(特性數據):

Turn on delay time	
I/P	90Vac/63Hz
Character Result	0.13S

※ Character Waveform (特性波形):



2-1. Hold Up Time Character (保持時間)

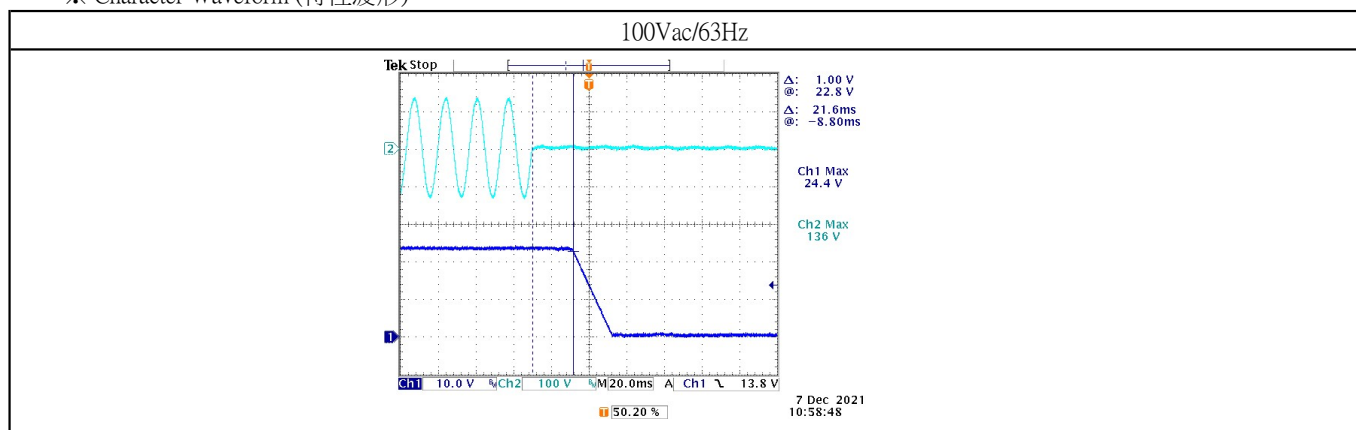
※ Character Condition(特性條件):

1	I/P Voltage(Vac)(輸入電壓)	100Vac
2	I/P Frequency(Hz)(輸入頻率)	63Hz
3	Output Load(輸出負載)	Full Load
4	Ambient Temp.(°C)(環境溫度)	25°C
5	Sample Size(取樣數)	1PCS

※ Character Data(特性數據):

Hold up time	
I/P	100Vac/63Hz
Character Result	21.6mS

※ Character Waveform (特性波形):



2-2. Low Vac Shut Off (輸入欠压關斷特性)

※ Character Condition(特性條件):

1	I/P Voltage(Vac)(輸入電壓)	0~90Vac
2	I/P Frequency(Hz)(輸入頻率)	60Hz
3	Output Load(輸出負載)	Full Load
4	Ambient Temp.(°C)(環境溫度)	25°C
5	Sample Size(取樣數)	1PCS

※ Character Data(特性數據):

LOW Vac SHUT OFF	
0~90Vac Input	
O/P	Full Load
Brown in	81.6V
90~0Vac Input	
O/P	Full Load
Brown out	74.9V

2-3. Over Shoot(過沖特性)

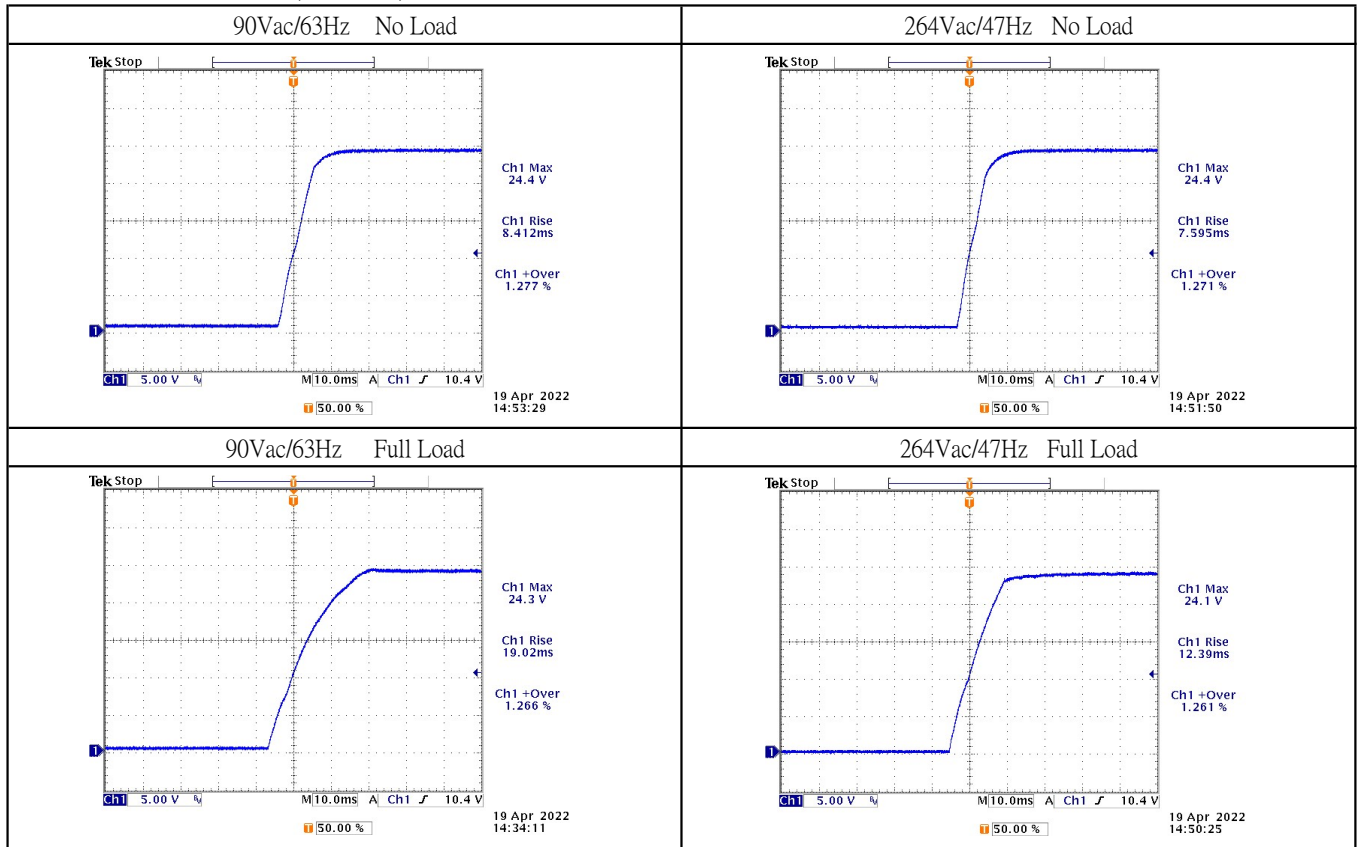
※ Character Condition(特性條件):

1	I/P Voltage(Vac)(輸入電壓)	90Vac/264Vac
2	I/P Frequency(Hz)(輸入頻率)	47Hz /63Hz
3	Output Load(輸出負載)	No Load/Full Load
4	Ambient Temp.(°C)(環境溫度)	25°C
5	Sample Size(取樣數)	1PCS

※ Character Data(特性數據):

Over Shoot				
O/P	No Load		Full Load	
I/P	90Vac/63Hz	264Vac/47Hz	90Vac/63Hz	264Vac/47Hz
Character Result	24.4V	24.4V	24.3V	24.1V

※ Character Waveform (特性波形):





2-4.Under Shoot(下沖特性)

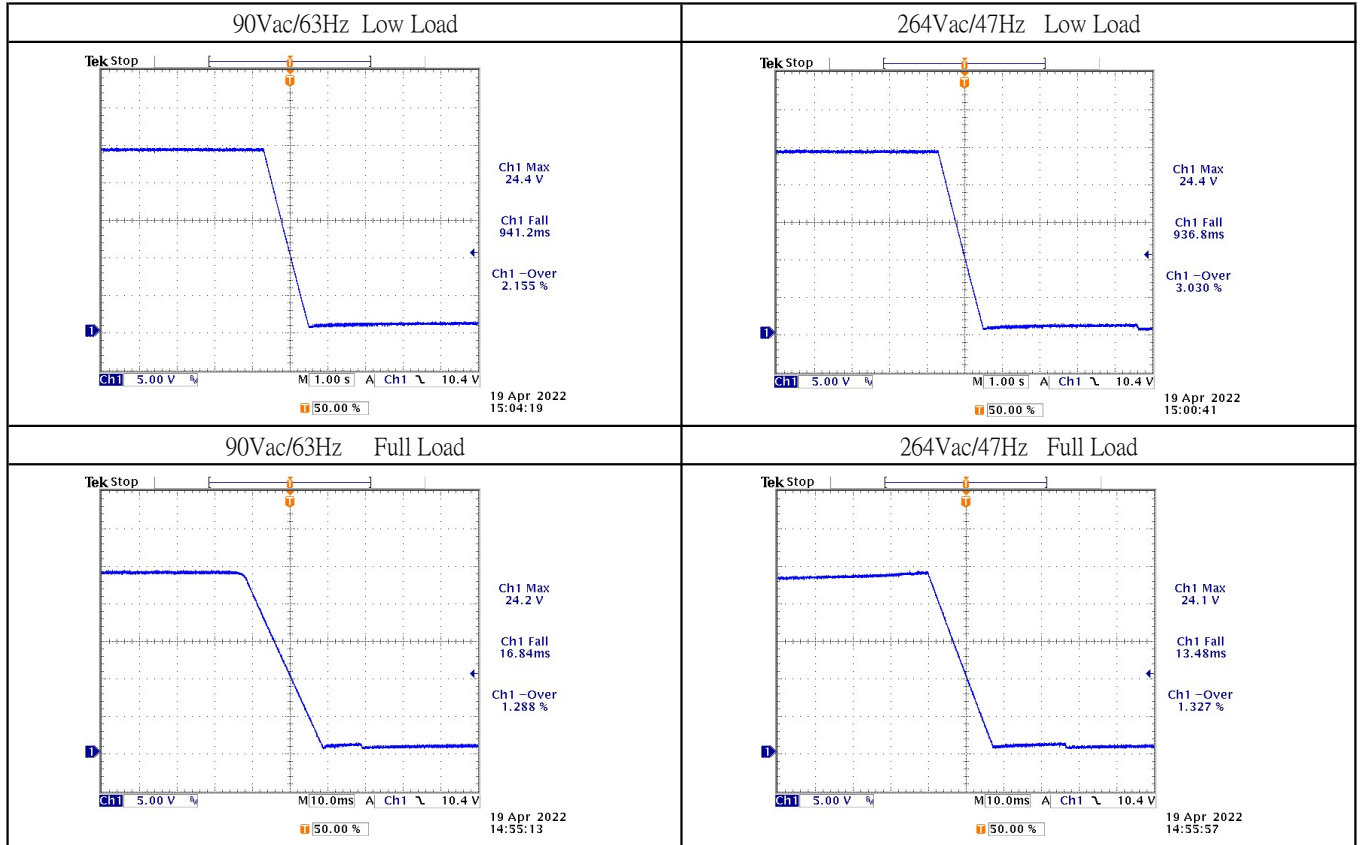
※ Character Condition(特性條件):

1	I/P Voltage(Vac)(輸入電壓)	90Vac/264Vac
2	I/P Frequency(Hz)(輸入頻率)	47Hz /63Hz
3	Output Load(輸出負載)	Low/Full Load
4	Ambient Temp.(°C)(環境溫度)	25°C
5	Sample Size(取樣數)	1PCS

※ Character Data(特性數據):

Under Shoot				
O/P	0.1A		Full Load	
I/P	90Vac/63Hz	264Vac/47Hz	90Vac/63Hz	264Vac/47Hz
Character Result	24.4V	24.4V	24.2V	24.1V

※ Character Waveform (特性波形):



## 2-5.Leak Current(漏電流特性)

※Character Condition(特性條件) :

1	I/P Voltage(Vac)(輸入電壓)	264Vac
2	I/P Frequency(Hz)(輸入頻率)	50Hz
3	Output Load(輸出負載)	No Load
4	Ambient Temp.(°C)(環境溫度)	25°C
5	Sample Size(取樣數)	1PCS
6		

※Character Equipment(特性設備) :

ITEM	Equipment Item(設備)	Model No. / Manufacturer(製造商和型號)
1	Leak current Characterer(泄漏電流特性儀)	VG2301
2		
3		
4		

## LEAK CURRENT CHARACTER

Spec.(mA MAX)	0.75
O/P	No Load
I/P	264Vac

※Character Data :

SINGLE-PHASE EQUIPMENT						
The Character was made in all combinations to the normal and reverse polarity of the supply circuit(Polarity Switch P1)						
Terminal A (Switch"s") of Measuring Instrument Connected to:	Switch"e" Position	Touch Current (mA r.m.s.)				
		Polarity P1/Primary Switch Condition				
		Normal/On	Normal/Off	Reverse/On	Reverse/Off	Judgement
Output	Closed	0.268	-	0.27	-	Pass

The touch current [did not] exceed \_\_\_\_\_ mA r.m.s with terminal A connected to the earth terminal of the unit with Switch "e" opened.

The touch current [did not] exceed 0.75 mA r.m.s with terminal A connected to the earth terminal of the unit with Switch "e" closed.