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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)

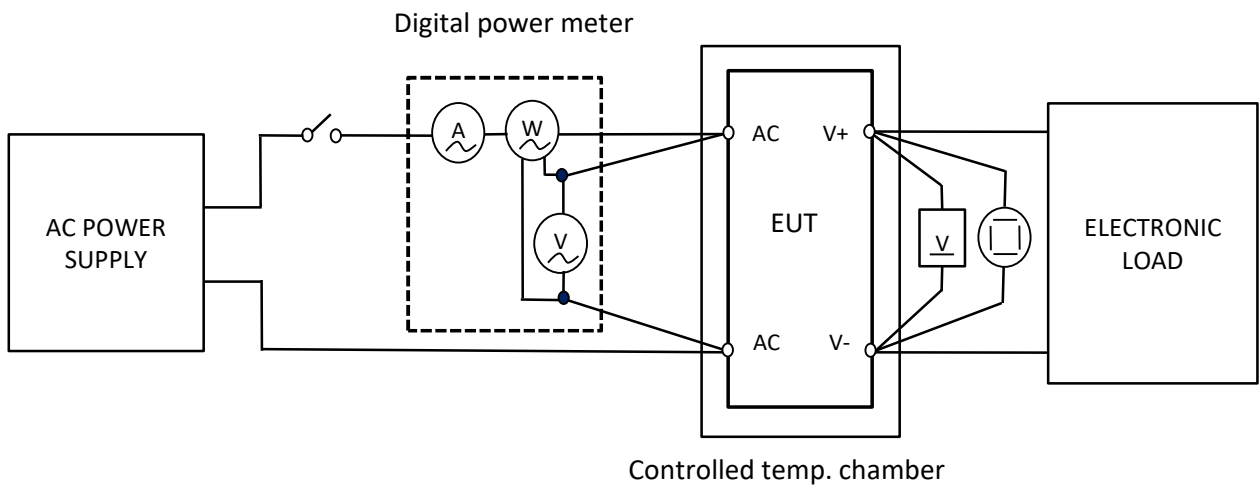
Turn On Delay(開機爬升延遲時間)

Hold Up Time Character (保持時間)

Low Vac Shut Off (輸入欠壓關斷特性)

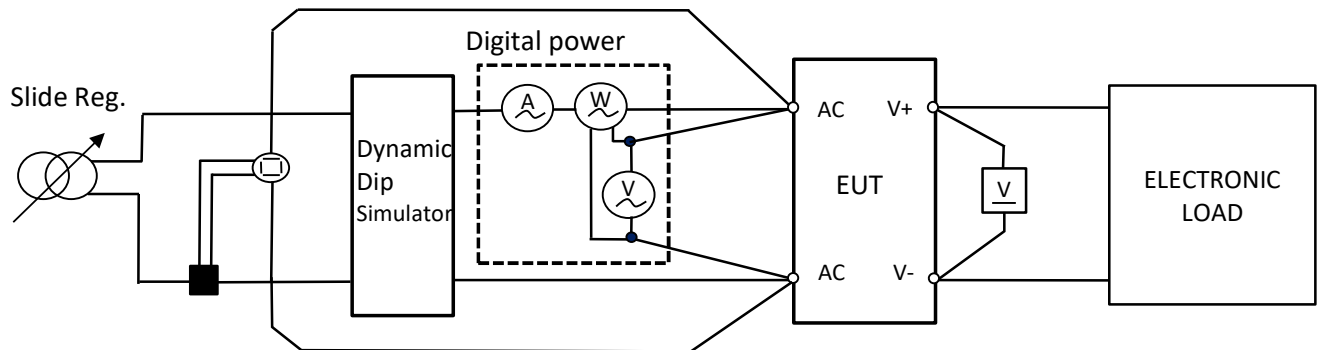
Over Shoot(過沖特性)

Under Shoot(下沖特性)

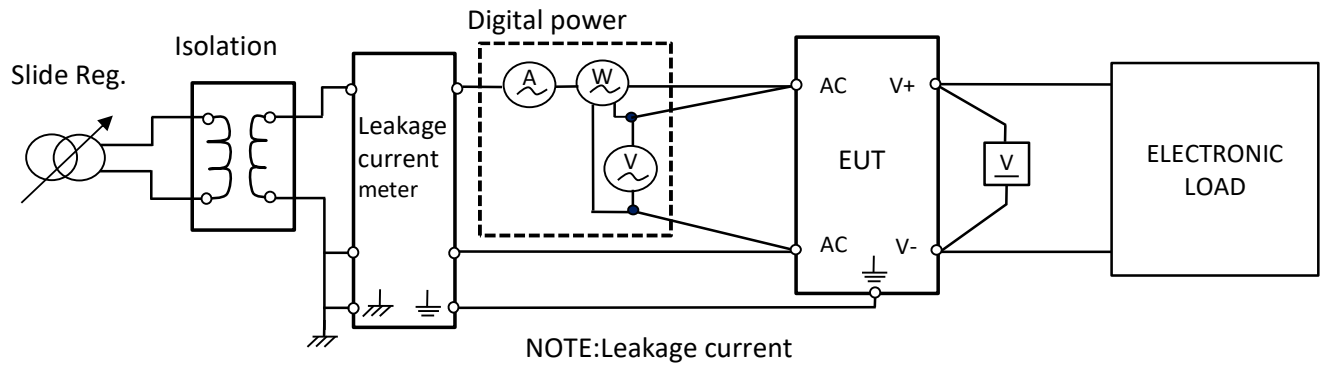


Circuit 2 特性回路2

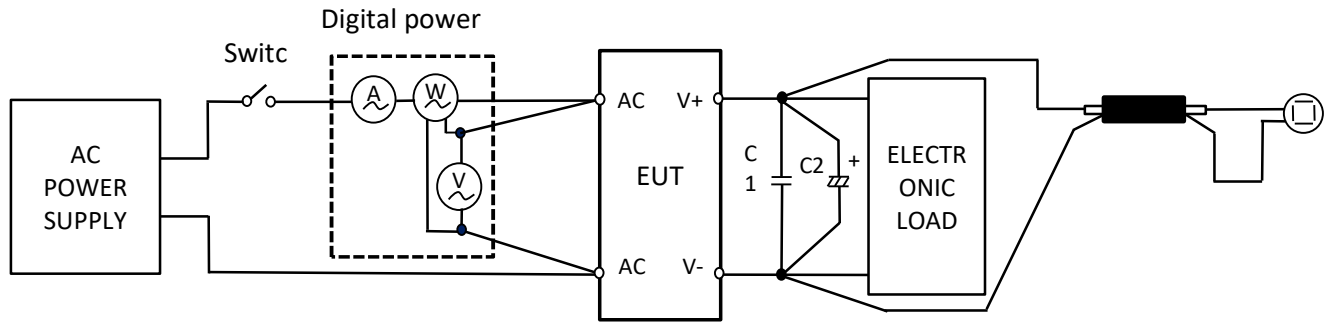
Inrush Current (浪涌電流)



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 : 22 $\mu$  50V 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: $\leq 0.5\%$ ; Line Regulation $\leq 0.4\%$
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 $\leq 0.4\%$
0%	24.21V	24.21V	24.21V	24.22V	0.04%
25%	24.2V	24.21V	24.21V	24.21V	0.04%
50%	24.2V	24.2V	24.2V	24.21V	0.04%
75%	24.19V	24.2V	24.2V	24.2V	0.04%
100%	24.19V	24.19V	24.19V	24.2V	0.04%
Load Regulation: $\leq 0.5\%$	0.08%	0.08%	0.08%	0.08%	

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: $\leq 0.8\%$ ; Line Regulation $\leq 0.8\%$
5	Ambient Temp.(°C)(環境溫度)	25°C
6	Sample Size(取樣數)	1PCS

Output voltage	5.0V
----------------	------

※ Character Data(特性數據):

O/P \ I/P	90Vac/63Hz	100Vac/60Hz	240Vac/50Hz	264Vac/47Hz	Line Regulation $\leq 0.8\%$
0%	5.0V	5.0V	5.0V	5.0V	0.00%
25%	4.99V	4.99V	4.99V	4.99V	0.00%
50%	4.99V	4.98V	4.98V	4.98V	0.20%
75%	4.98V	4.98V	4.98V	4.98V	0.00%
100%	4.97V	4.97V	4.97V	4.97V	0.00%
Load Regulation: $\leq 0.8\%$	0.60%	0.60%	0.60%	0.60%	

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

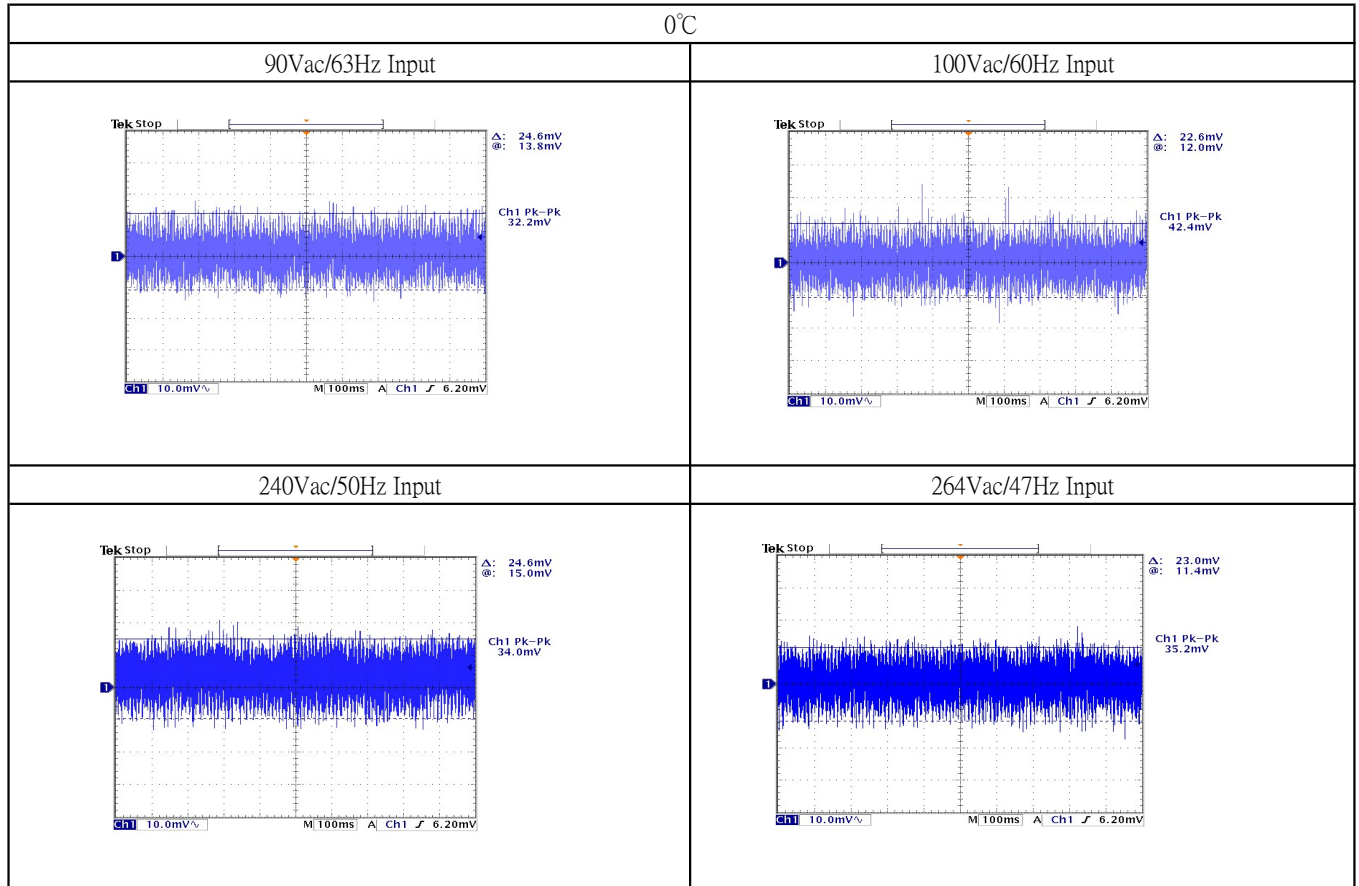
※ Character Condition(特性條件):

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	24.6mV	32.2mV	22.6mV	42.4mV	24.6mV	34.0mV	23.0mV	35.2mV

※ Character Waveform (特性波形):



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

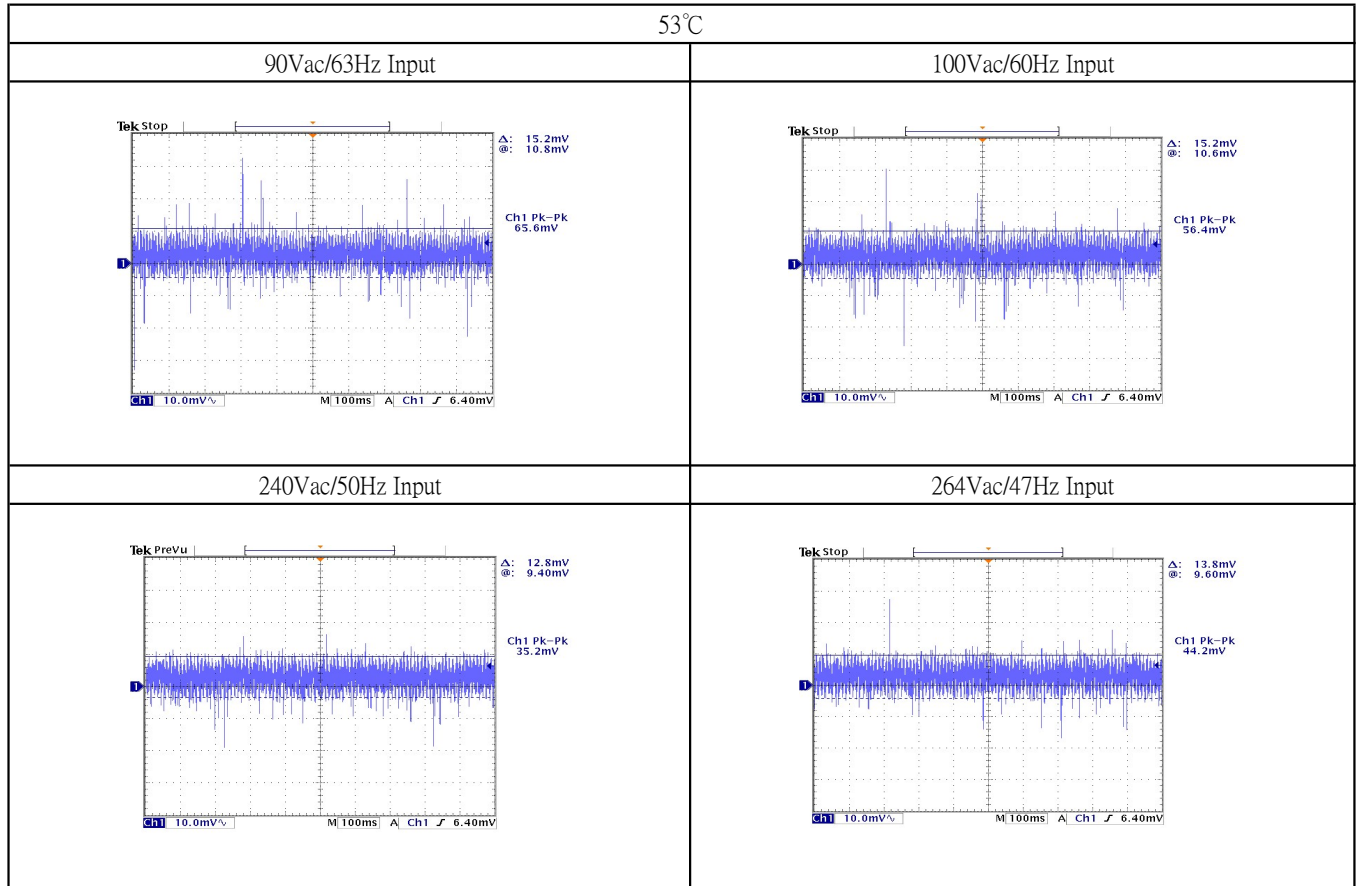
※ Character Condition(特性條件):

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	15.2mV	65.6mV	15.2mV	56.4mV	12.8mV	35.2mV	13.8mV	44.2mV

※ Character Waveform (特性波形):



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

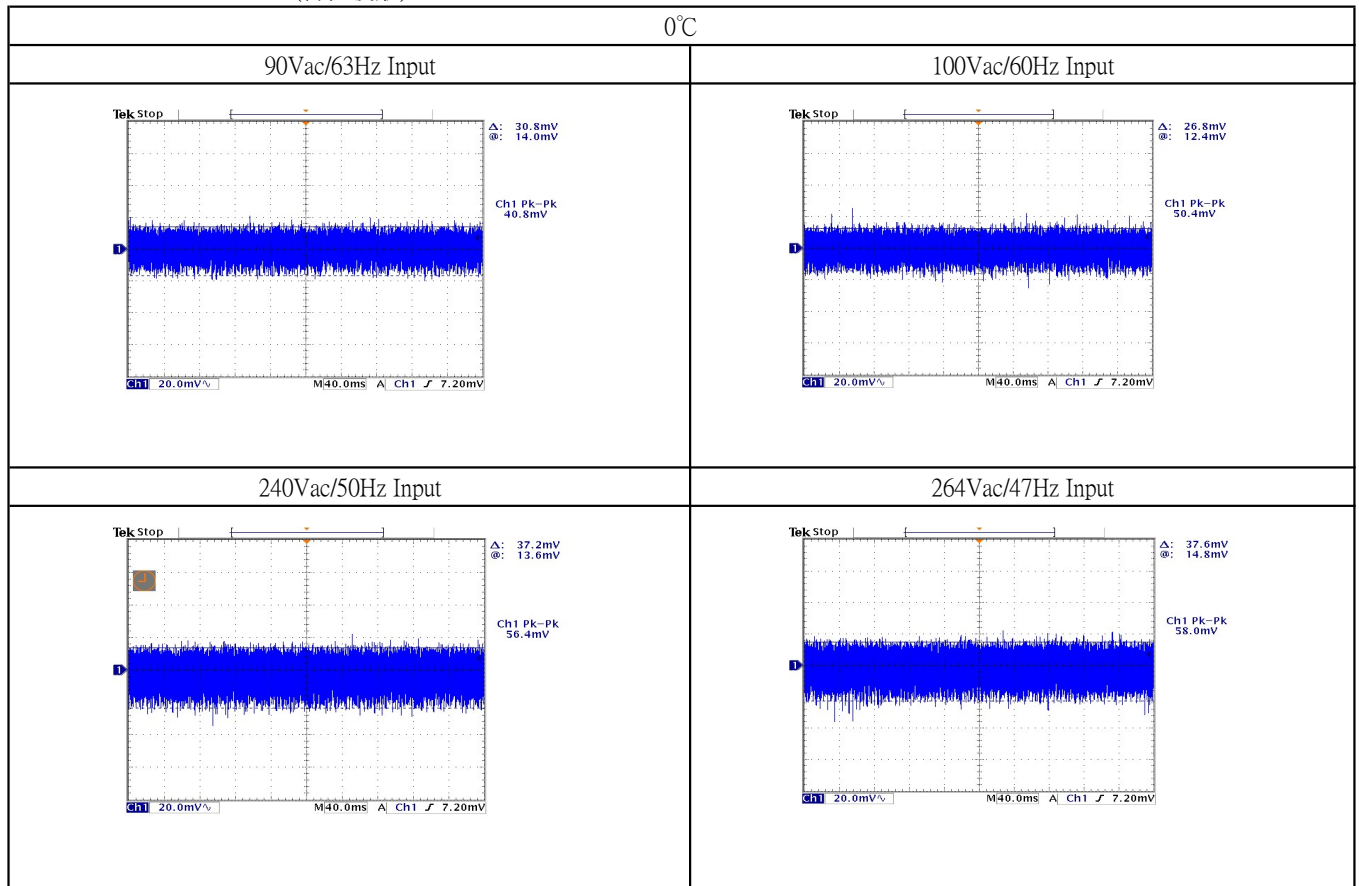
※ Character Condition(特性條件):

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	30.8mV	40.8mV	26.8mV	50.4mV	37.2mV	56.4mV	37.6mV	58.0mV

※ Character Waveform (特性波形):





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

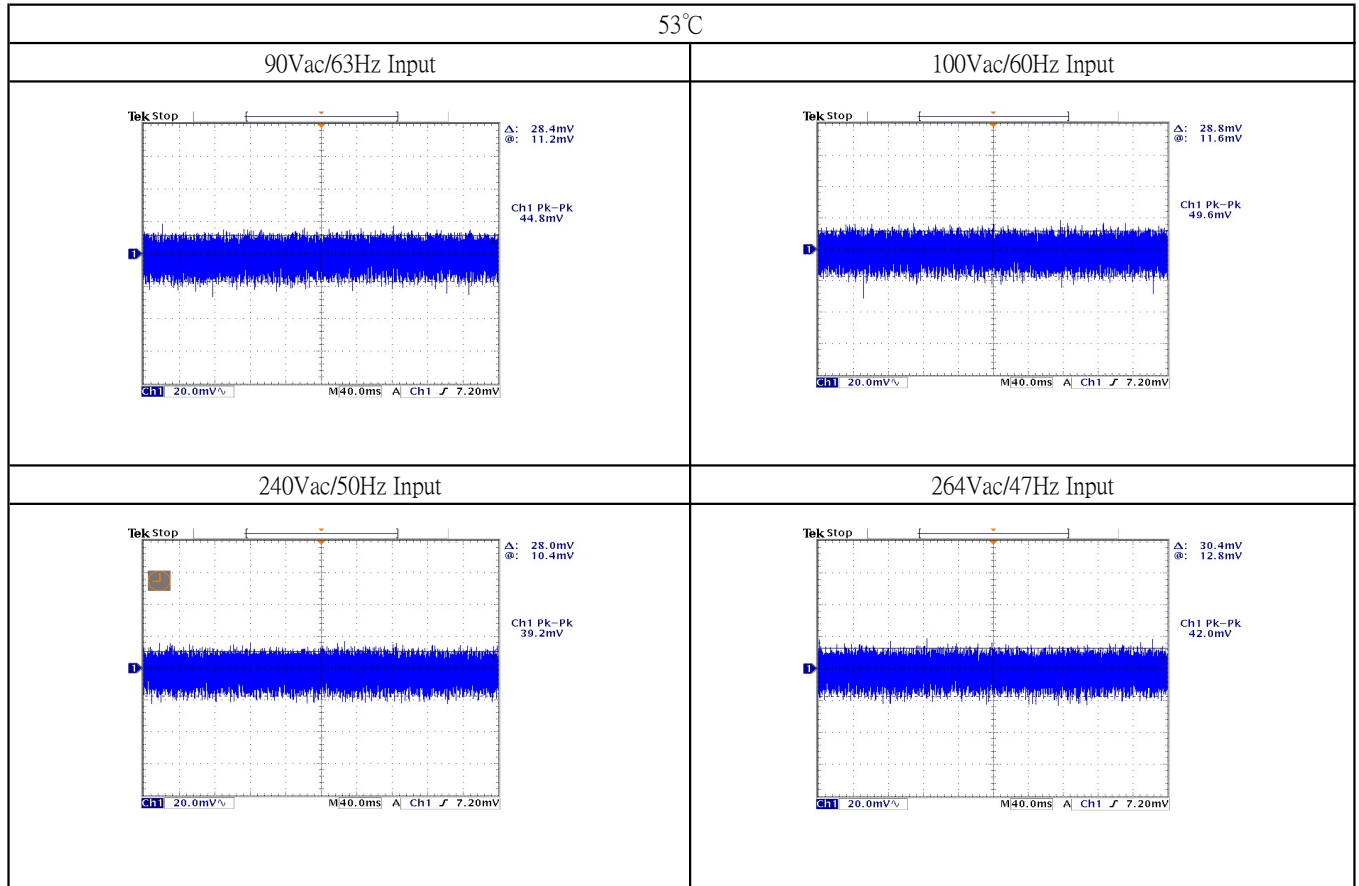
※ Character Condition(特性條件):

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	44.8mV	28.8mV	49.6mV	28.0mV	39.2mV	30.41mV	42.0mV

※ Character Waveform (特性波形):



1-3.Over-Voltage Protection(過電壓保護特性)

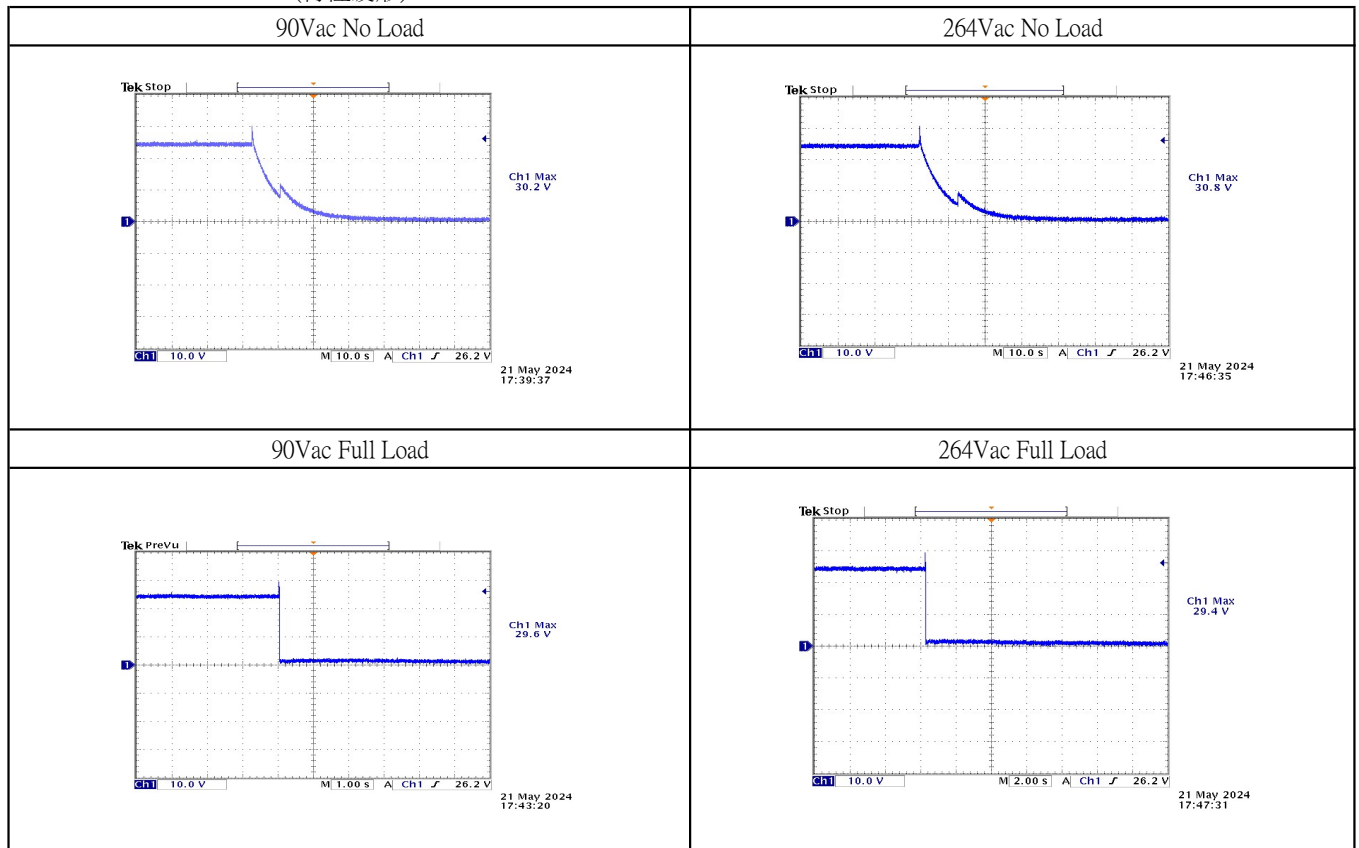
※ Character Condition(特性條件):

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	30.2V	30.8V	29.6V	29.4V

※ Character Waveform (特性波形):



1-3.Over-Voltage Protection(過電壓保護特性)

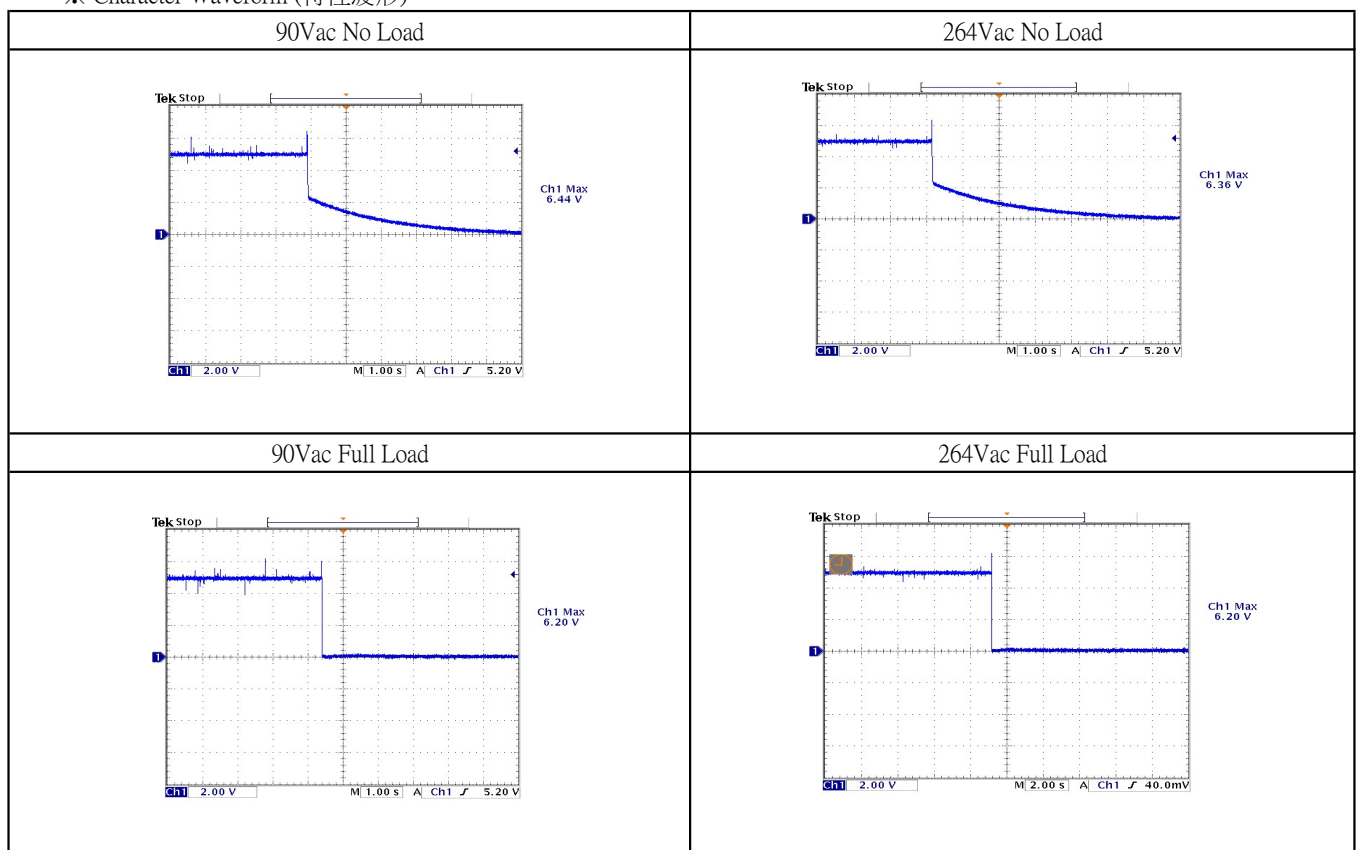
※ Character Condition(特性條件):

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	6.44V	6.36V	6.2V	6.2V

※ Character Waveform (特性波形):



1-4.Over-Current Protection(過電流保護特性)

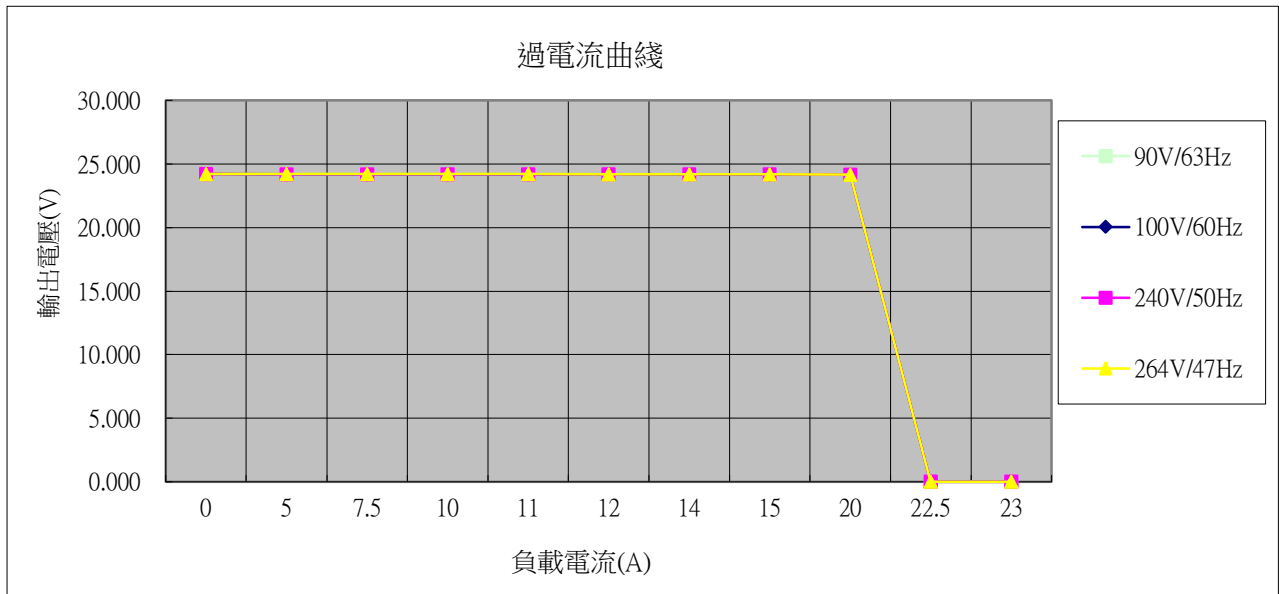
※ Character Condition(特性條件):

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	22.5A	22.5A	22.5A	22.5A

I/P	90V/63Hz										
Voltage(V)	24.210	24.180	24.180	24.170	24.170	24.170	24.170	24	24.17	0	0
Current(A)	0	5	7.5	10	11	12	14	15	20	22.5	23
I/P	100V/60Hz										
Voltage(V)	24.210	24.190	24.190	24.180	24.180	24.180	24.170	24.170	24.16	0	0
Current(A)	0	5	7.5	10	11	12	14	15	20	22.5	23
I/P	240V/50Hz										
Voltage(V)	24.210	24.190	24.190	24.180	24.180	24.180	24.180	24.180	24.170	0	0
Current(A)	0	5	7.5	10	11	12	14	15	20	22.5	23
I/P	264V/47Hz										
Voltage(V)	24.220	24.210	24.200	24.200	24.200	24.190	24.180	24.180	24.170	0	0
Current(A)	0	5	7.5	10	11	12	14	15	20	22.5	23



1-4.Over-Current Protection(過電流保護特性)

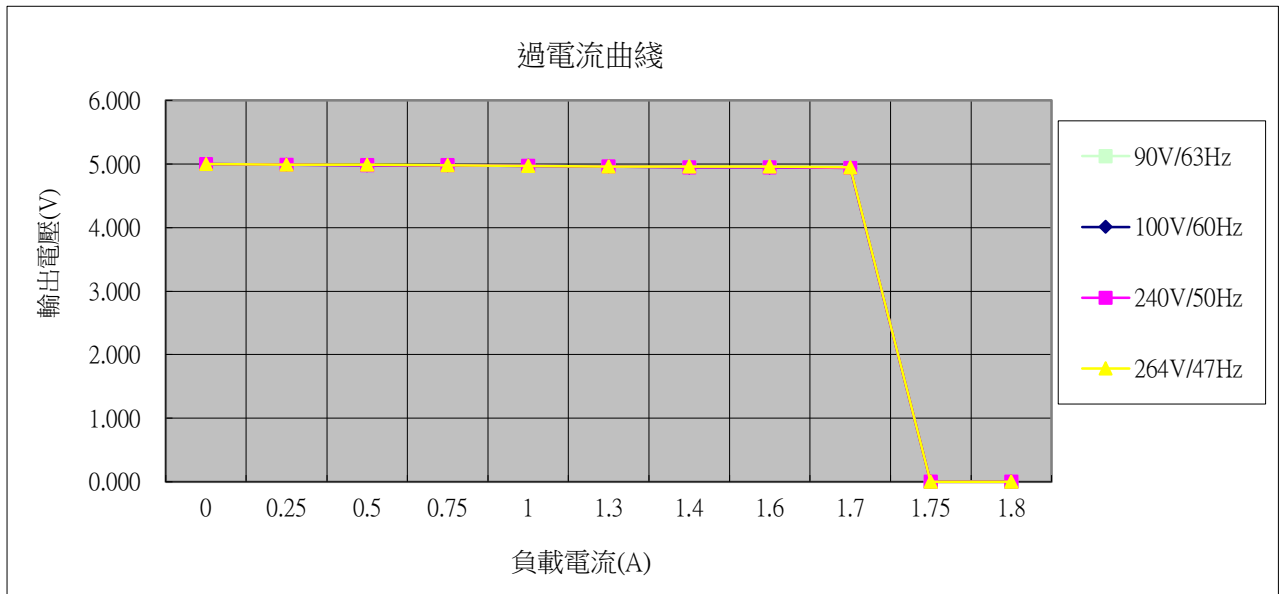
※ Character Condition(特性條件):

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	1.7A	1.7A	1.7A	1.7A

I/P	90V/63Hz										
Voltage(V)	5.000	4.990	4.980	4.980	4.970	4.960	4.950	5	4.94	0	0
Current(A)	0	0.25	0.5	0.75	1	1.3	1.4	1.6	1.7	1.75	1.8
I/P	100V/60Hz										
Voltage(V)	5.000	4.990	4.980	4.980	4.970	4.960	4.950	4.950	4.94	0	0
Current(A)	0	0.25	0.5	0.75	1	1.3	1.4	1.6	1.7	1.75	1.8
I/P	240V/50Hz										
Voltage(V)	5.000	4.990	4.980	4.980	4.970	4.960	4.950	4.950	4.940	0	0
Current(A)	0	0.25	0.5	0.75	1	1.3	1.4	1.6	1.7	1.75	1.8
I/P	264V/47Hz										
Voltage(V)	5.000	4.990	4.990	4.980	4.970	4.960	4.960	4.960	4.950	0	0
Current(A)	0	0.25	0.5	0.75	1	1.3	1.4	1.6	1.7	1.75	1.8



MODEL NO: UOHC3240-2410

24V/10A

1-5. Dynamic ripple Character(動態負載特性)

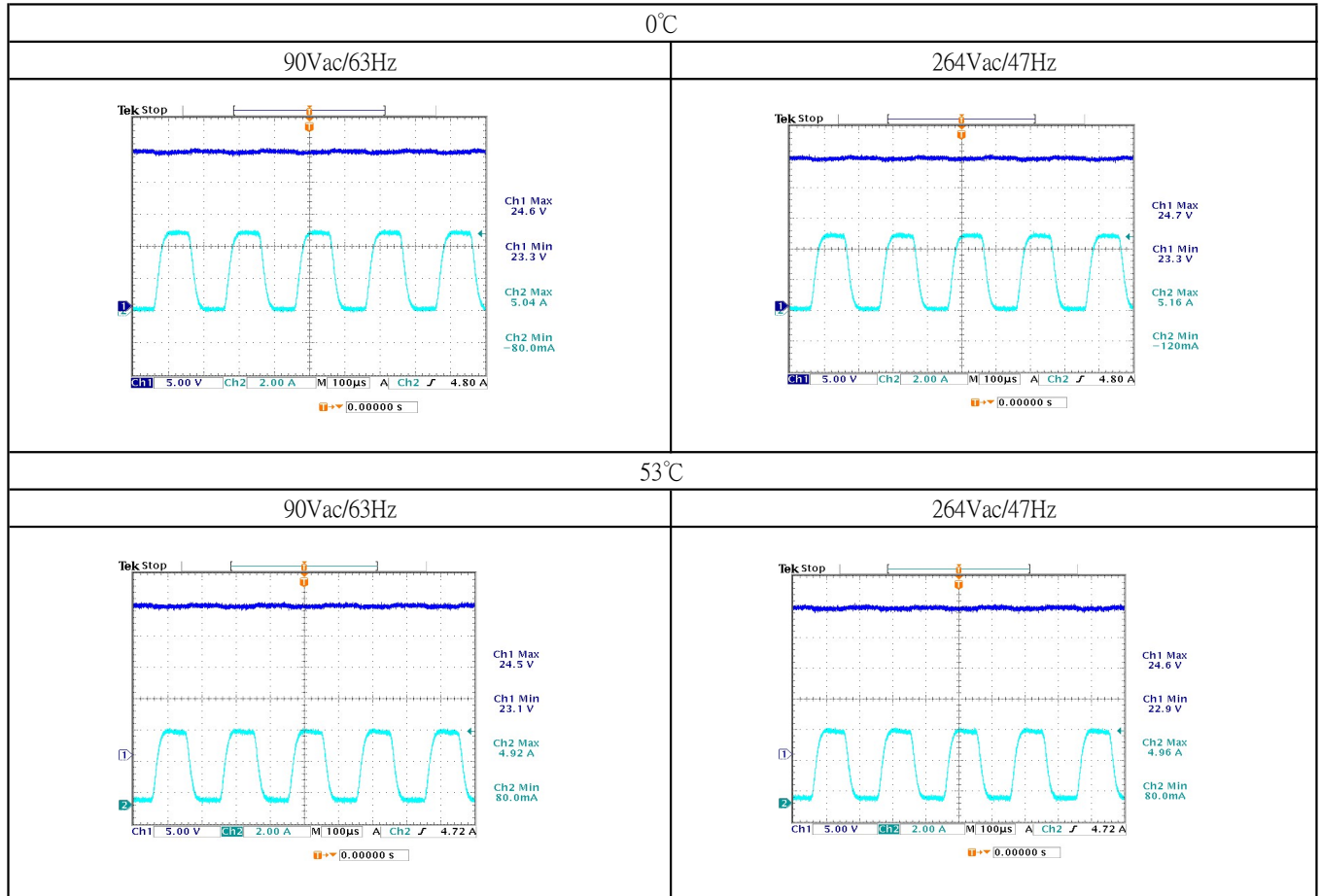
※ Character Condition(特性條件):

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)	0%-50% Full Load,TH=0.1ms,TL=0.1ms,Slew rate=1A/us
4	Ambient Temp.(°C)(環境溫度)	0°C/50°C
5	Sample Size(取樣數)	1PCS

※ Character Data(特性數據):

I/P	90Vac/63Hz		264Vac/47Hz	
	Max	Min	Max	Min
O/P				
0°C	24.6V	23.3V	24.7V	23.3V
53°C	24.5V	23.1V	24.6V	22.9V

※ Character Waveform (特性波形):



MODEL NO: UOHC3240-2410

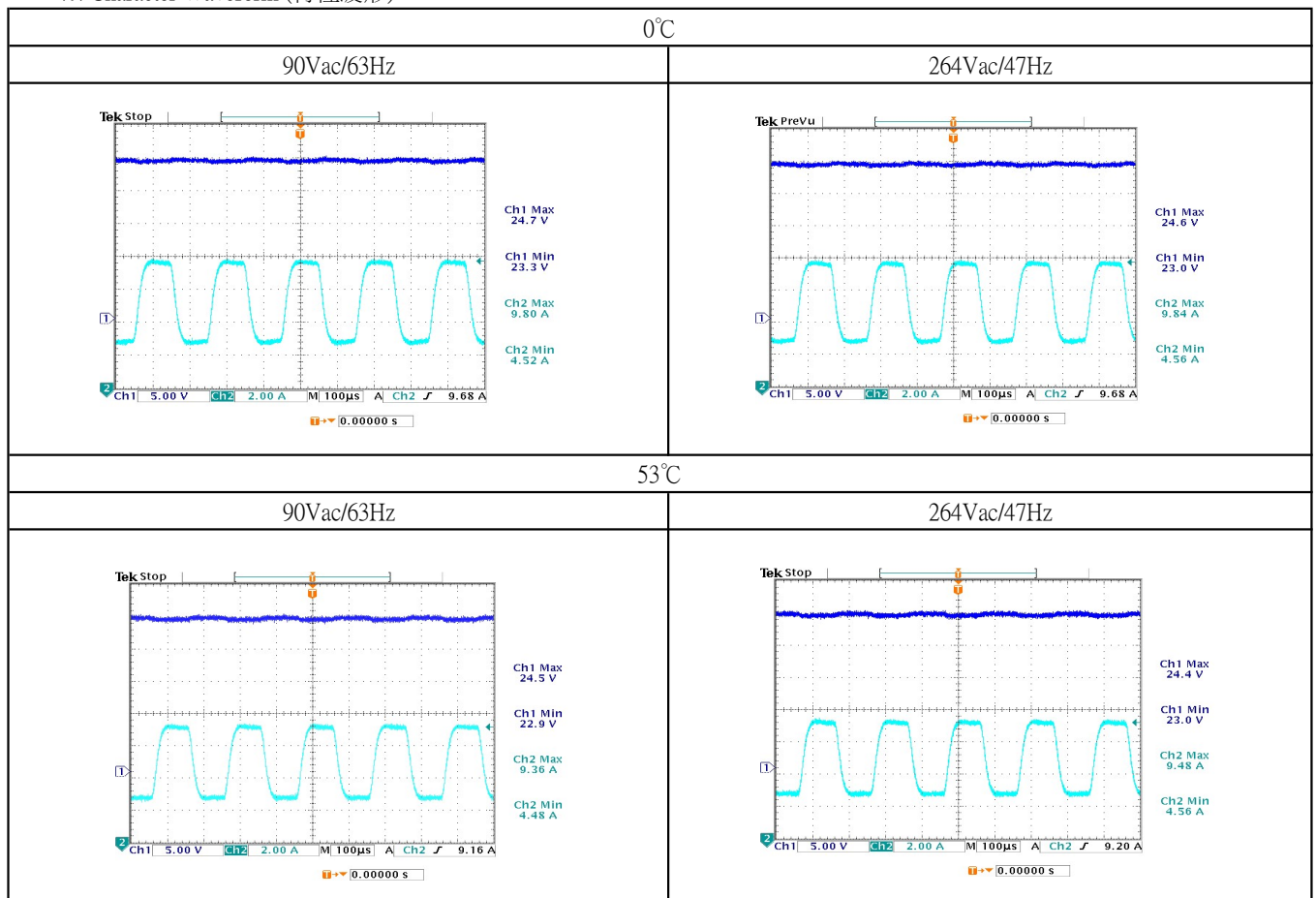
24V/10A

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=0.1ms, TL=0.1ms, Slew rate=1A/us
4	Ambient Temp.(°C)(環境溫度)	0°C /50°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	24.7V	23.3V	24.6V	23.0V
53°C	24.5V	22.9V	24.4V	23.0V

※ Character Waveform (特性波形):



MODEL NO: UOHC3240-2410

24V/10A

1-5. Dynamic ripple Character(動態負載特性)

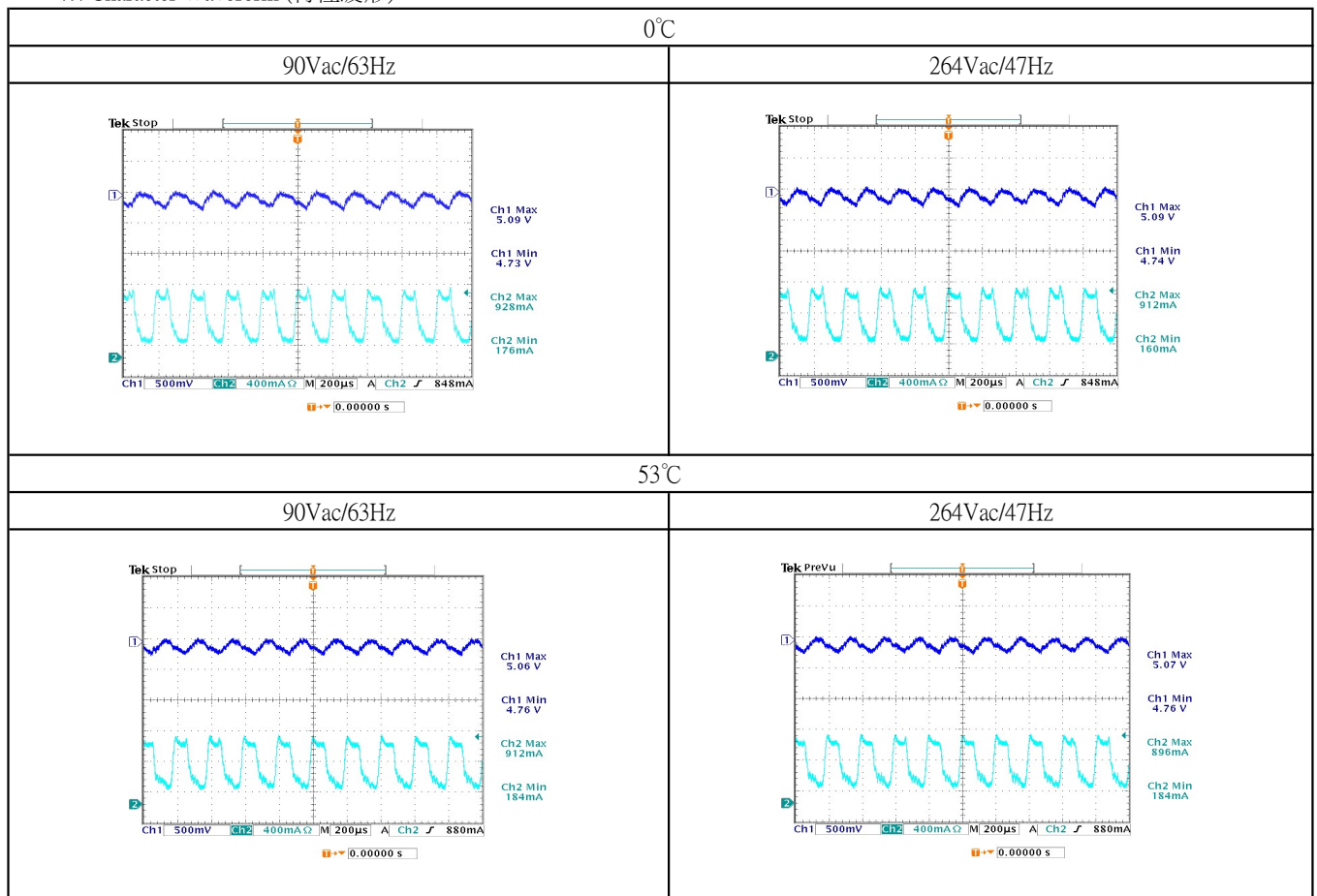
※ Character Condition(特性條件):

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)	20%-80% Full Load, TH=0.1ms, TL=0.1ms, Slew rate=0.1A/us
4	Ambient Temp.(°C)(環境溫度)	0°C /50°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	5.09V	4.73V	5.09V	4.74V
53°C	5.06V	4.76V	5.07V	4.76V

※ 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%,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)	10.0A

※ Character Data(特性數據):

使用線材	N/A
------	-----

Efficiency								Stand by consumption	
Load		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 (%)	5.85W	4.9W	
25%	2.5A	72.14	61.76	85.61%	71.3	61.76			86.62%
50%	5.0A	138.39	123.49	89.23%	136.55	123.44			90.40%
75%	7.5A	205.33	185.21	90.20%	202.48	185.13			91.43%
100%	10.0A	274.72	246.84	89.85%	269.45	246.84			91.61%
Average				88.72%			90.01%		

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

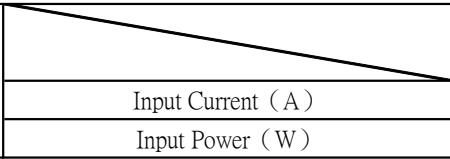
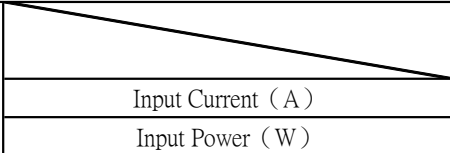
※ Character Condition(特性條件) :

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/APG-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 )	0.104	0.096
		Input Power ( W )	5.73	4.617
Input change with full load				
Full Load		Input Condition		
		90V/63Hz	264Vac/47Hz	
		Input Current ( A )	3.108	1.081
		Input Power ( W )	278.95	268.5

1-8.Inrush Current (浪涌電流)

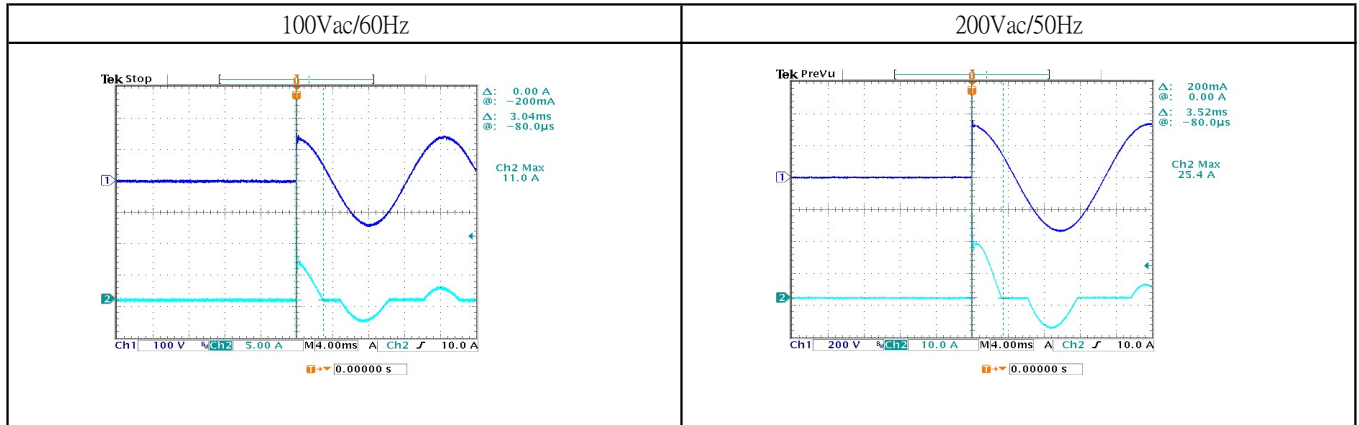
※ Character Condition(特性條件):

1	I/P Voltage(Vac)(輸入電壓)	100Vac/200Vac
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	200Vac/50Hz
Character Result	11.0A	24.4A

※ Character Waveform (特性波形):



1-9.Turn On Delay(開機爬升延遲時間)

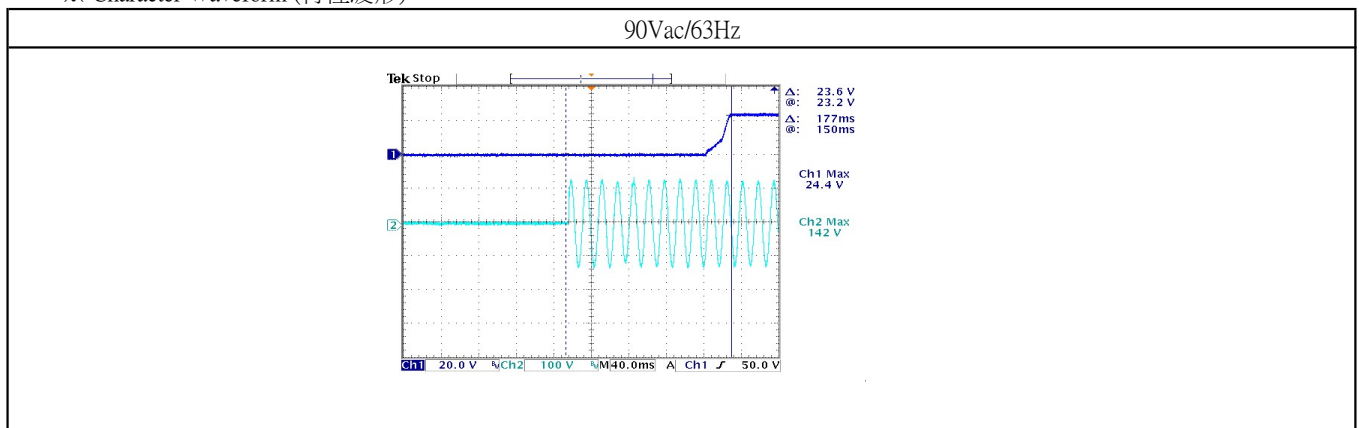
※ Character Condition(特性條件) :

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	0.18S

※ Character Waveform (特性波形) :



2-1. Hold Up Time Character (保持時間)

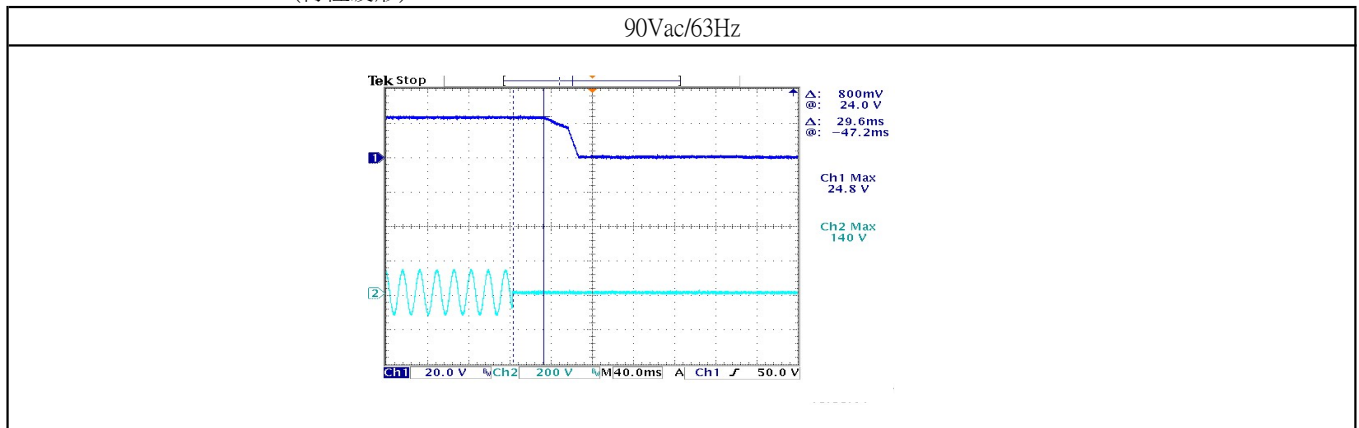
※ Character Condition(特性條件):

1	I/P Voltage(Vac)(輸入電壓)	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):

Hold up time	
I/P	90Vac/63Hz
Character Result	29.6mS

※ Character Waveform (特性波形):



2-2. Low Vac Shut Off (輸入欠壓關斷特性)

※ 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	77.4V
90~0Vac Input	
O/P	Full Load
Brown out	67.0V

2-3. Over Shoot(過沖特性)

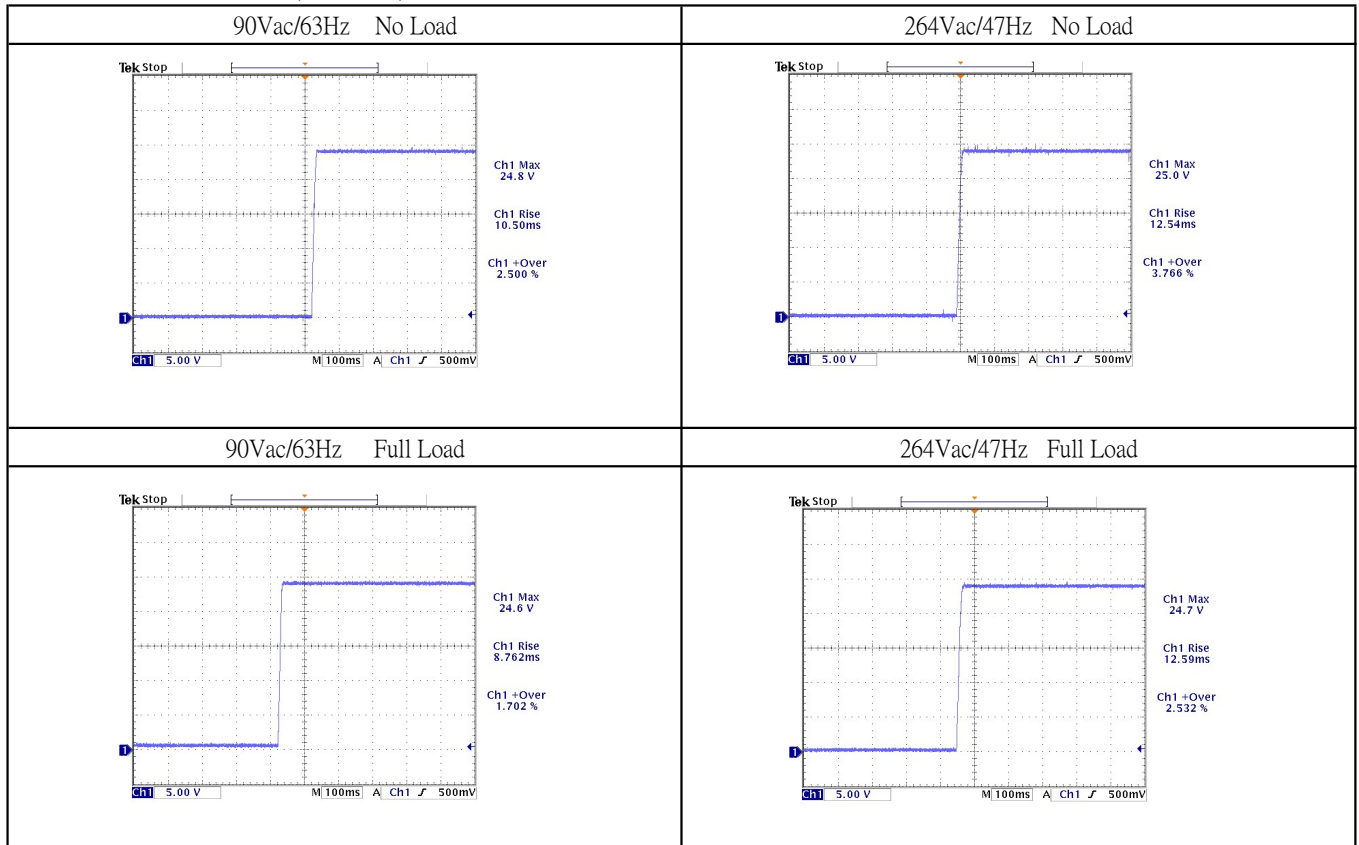
※ Character Condition(特性條件):

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	24.8V	25.0V	24.6V	24.7V

※ Character Waveform (特性波形):



2-4.Under Shoot(下沖特性)

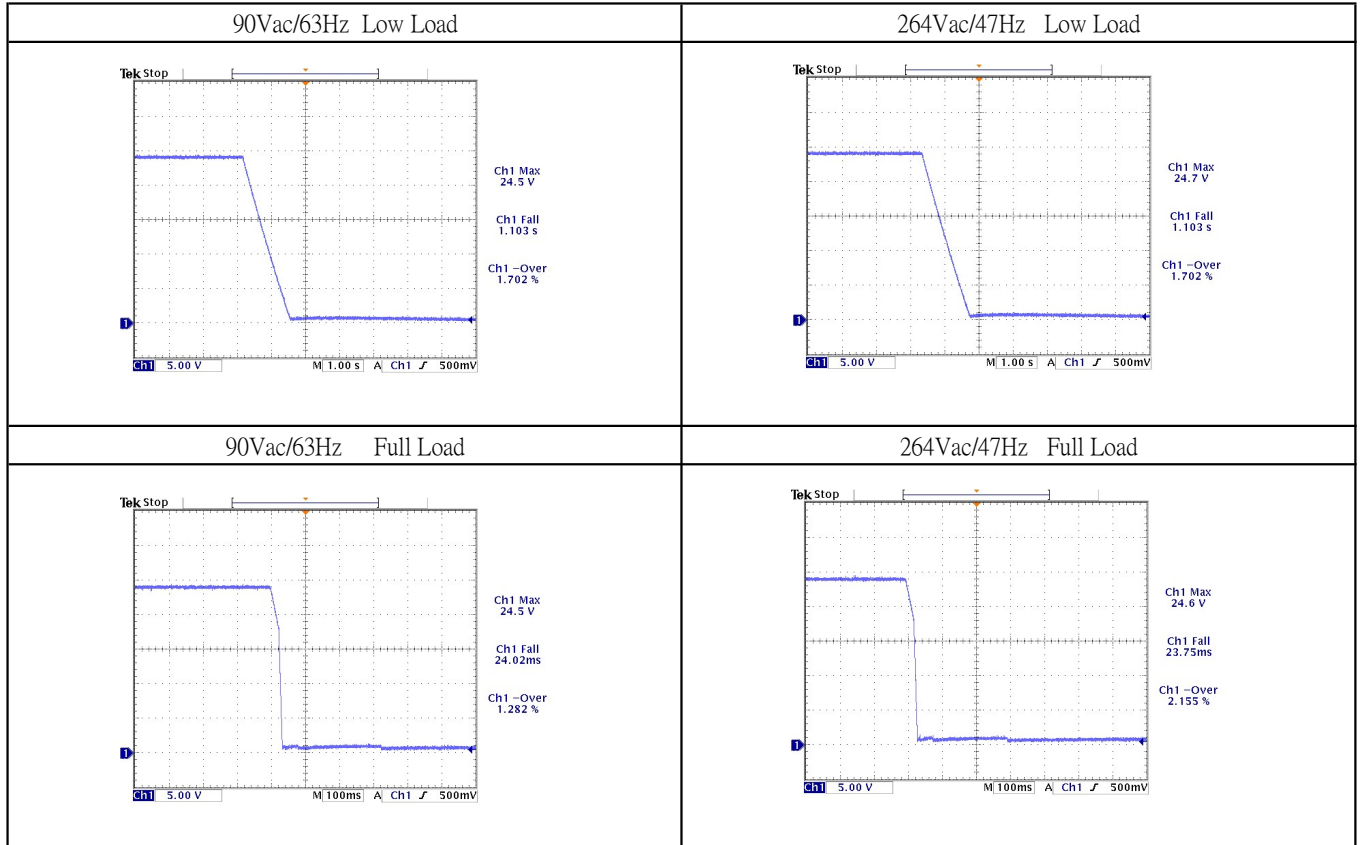
※ Character Condition(特性條件):

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	24.5V	24.7V	24.5V	24.6V

※ 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	0.072	-	0.073	-	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.