

QUALITY  
TEST DATA

SWT30 -- \*

# ----- INDEX -----

<b>1. Specifications</b>	1
<b>2. Evaluation Method</b>	
2 - 1 Circuits used for determination	2 - 4
(1) Steady state data	
(2) Warm up voltage drift	
(3) Over current protection (O.C.P) characteristics	
(4) Over voltage protection (O.V.P) characteristics	
(5) Output rise characteristics	
(6) Output fall characteristics	
(7) Dynamic line - response	
(8) Dynamic load - response	
(9) Inrush current characteristics	
(10) Leakage current	
(11) Output ripple noise	
2 - 2 List of equipments	5
<b>3. Characteristics</b>	
3 - 1 Steady state data	6 - 10
(1) Regulation - line and load, temp. drift	
(2) Output voltage and ripple voltage v.s. input voltage	
(3) Efficiency and input current v.s. output current	
3 - 2 Warm up voltage drift	11
3 - 3 O.C.P characteristics	12 - 14
3 - 4 O.V.P characteristics	15

3 - 5	Output rise time	16 - 19
3 - 6	Output fall time	20 - 23
3 - 7	Output rise time with ON/OFF CONTROL	NA
3 - 8	Output fall time with ON/OFF CONTROL	NA
3 - 9	Hold up time	24
3 - 10	Dynamic line response	25 - 26
3 - 11	Dynamic load response	27 - 32
3 - 12	Response to brown out	33 - 34
3 - 13	Inrush current characteristics	35 - 36
3 - 14	Inrush current waveform	37 - 38
3 - 15	Leakage current	39
3 - 16	Output - ripple , noise	40 - 43

## Terminology

### Definition

$V_{in}$	-----	Input voltage
$V_{out}$	-----	Output voltage
$I_{in}$	-----	Input current
$I_{out}$	-----	Output current
$T_a$	-----	Ambient temperature

# SWT30 SPECIFICATIONS

CA701-01-01E

ITEMS	MODEL	SWT30-522			SWT30-525			SWT30-5FF			
		CH1	CH2	CH3	CH1	CH2	CH3	CH1	CH2	CH3	
1	NOMINAL OUTPUT VOLTAGE	V	+5	+12	-12	+5	+12	-5	+5	+15	-15
2	MIN. OUTPUT CURRENT	A	0.2	0.4	0	0.2	0.4	0	0.2	0.4	0
3	MAX. OUTPUT CURRENT	A	2	1.5	0.3	2	1.5	0.3	2	1	0.3
4	PEAK OUTPUT CURRENT (*10)	A	3	3	-	3	3	-	3	2.2	-
5	MAX. OUTPUT POWER (PEAK)	W	31.6(49.6)			29.5(47.5)			29.5(47.5)		
6	EFFICIENCY (TYP) (* 1)	-	70%								
7	INPUT VOLTAGE RANGE (* 2)	-	AC85~265V (Continuously), 47 ~ 63Hz / 110~340VDC								
8	INPUT CURRENT (TYP) (* 1)	-	0.90A(Vin=100VAC) / 0.45A(Vin=200VAC)								
9	INRUSH CURRENT (TYP)	-	15A / 100VAC, 30A / 200VAC ( cold start, Ta=25°C )								
10	OUTPUT VOLTAGE	-	CH1 +5V fixed, CH2.3 fixed Shipment condition: CH1: ±1%, CH2(+12V): ±3%,CH2(+15V):±5%, CH3: ±5%								
11	MAX. RIPPLE & NOISE (* 3)	-	±5V: 120mV; ±12V: 150mV; ±15V: 150 mV								
12	MAX. LINE REGULATION (*3,4)	-	CH1:1%, CH2: 2% , CH3: 1%								
13	MAX. LOAD REGULATION (*3,5)	-	CH1:2%, CH2: 4%, CH3: 2%								
14	MAX. TEMPERATURE DRIFT (*3,6)	-	0.04%/°C								
15	OVER CURRENT PROTECTION (* 7)	-	Automatic recovery, O.C.P point : 170% ~								
16	OVER VOLTAGE PROTECTION (* 8)	-	6V ~ (CH1 only)								
17	HOLD - UP TIME (TYP) (* 1)	-	17ms (Input 100 VAC)								
18	OPERATING TEMPERATURE (* 9)	-	Convection cooling 0~50°C:100% load; 60°C: 70% load								
19	OPERATING HUMIDITY	-	30%~90%RH								
20	STORAGE TEMPERATURE	-	-20°C ~ +85°C								
21	STORAGE HUMIDITY	-	10%~95%RH								
22	COOLING	-	Convection cooling								
23	EMI	-	Conform to FCC-B, VCCI-2, EN55022B								
24	WITHSTAND VOLTAGE	-	I/P-O/P:3kVAC(20mA), I/P-FG:2.5kVAC(20mA), O/P-FG:500VAC(100mA) for 1min								
25	ISOLATION RESISTANCE	-	More than 100MΩ at Ta=25°C and 70%RH, Output - FG 500VDC								
26	VIBRATION	-	10 - 55Hz Amplitude ( sweep 1min ) Less than 19.6m/s <sup>2</sup> X ,Y ,Z 1Hr each								
27	SHOCK	-	Less than 196.1m/s <sup>2</sup>								
28	OUTPUT GROUNDING	-	All channels common ground (2 terminals)								
29	SAFETY	-	Conform to UL1950, CSA950, EN60950, DENTORI								
30	WEIGHT	-	230g								
31	SIZE (W*D*H)	m/m	76.2 x 127.0 x 30.5								
		inch	3.00 x 5.00 x 1.20 (2.55 x 4.55 mounting hole Φ 3.5mm)								

## NOTES:

- At 100VAC, 200VAC and MAX. OUTPUT POWER (Convection cooling), Ta=25°C.
- For cases where conformance to various safety specs (UL,CSA, EN) are required to be described as 100~120VAC, 200~240VAC, 50/60 Hz on name plate.
- Please refer to Fig A for measurement determination of line & load regulation and output ripple voltage.  
(Measure with JEITA RC-9131 probe)
- From 85~132VAC / 170~265VAC, constant load.
- From Min. load - Full load ( Maximum power ), constant input voltage.
- From 0°C ~ +50°C, constant input voltage and load.
- Current limiting with automatic recovery. Avoid to operate over load or dead short for more than 30 seconds.
- Over voltage clamping by zener diode.
- At standard mounting method, Fig B.
- Peak current operation is less than 10 sec. with duty factor less than 30%. In addition, it does not has to satisfy the total regulation specification.

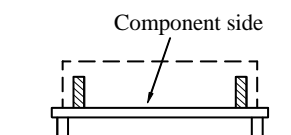
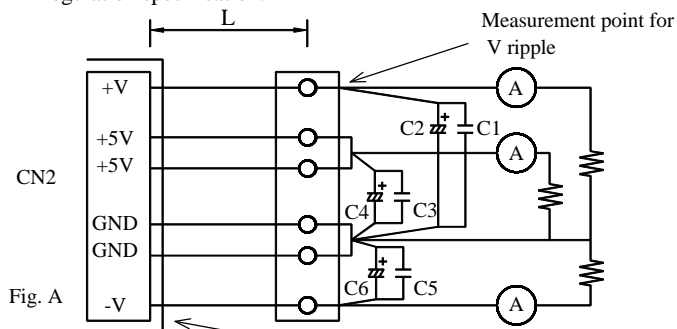


Fig. B

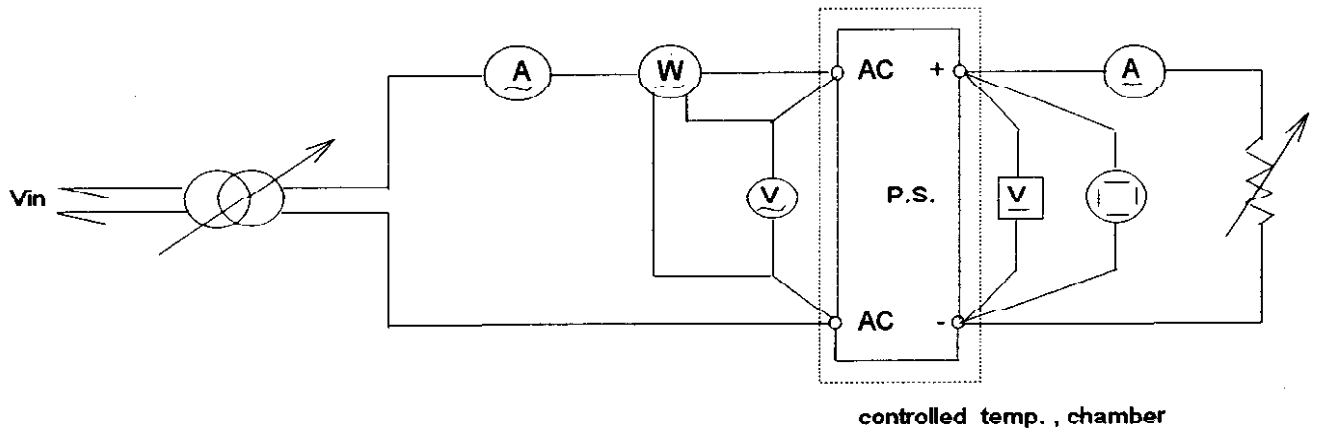
L: 150mm AWG#18  
 C1,C3,C5: Film Cap 0.1μF  
 C2,C4,C6: Elec. Cap 100μF  
 Bandwidth of scope: 100MHz

## 2. EVALUATION METHOD

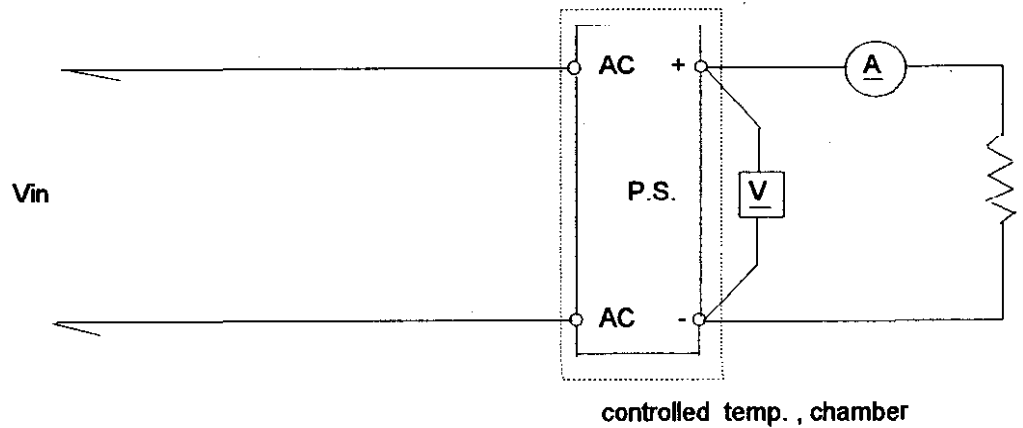
SWT30 - \*

### 2-1 Circuits used for determination

#### (1) Steady state data

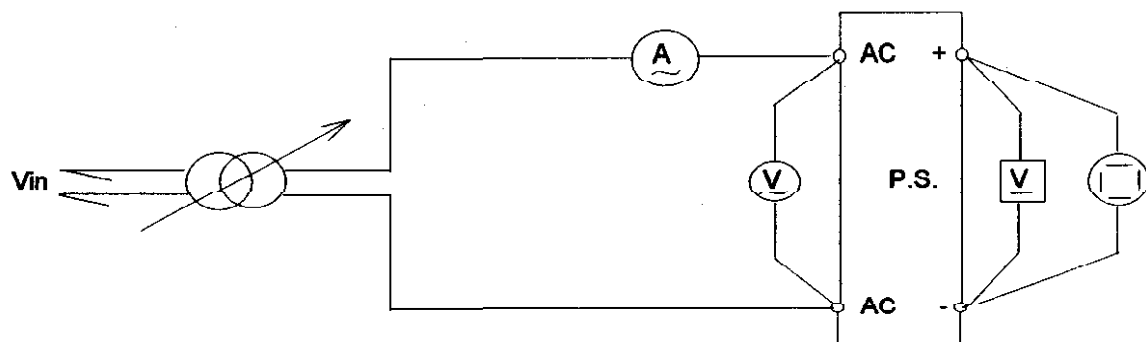


#### (2) Warm up voltage drift characteristics



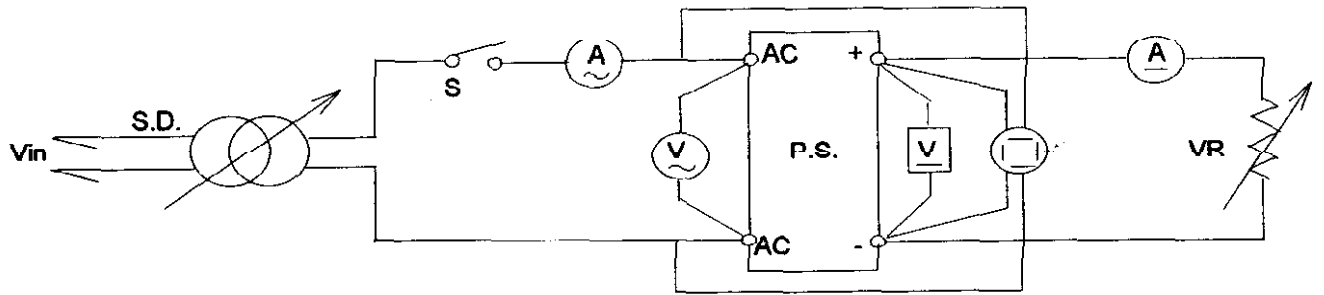
#### (3) Over current protection (OCP) characteristics Same as steady state data

#### (4) Over voltage protection (OVP) characteristics



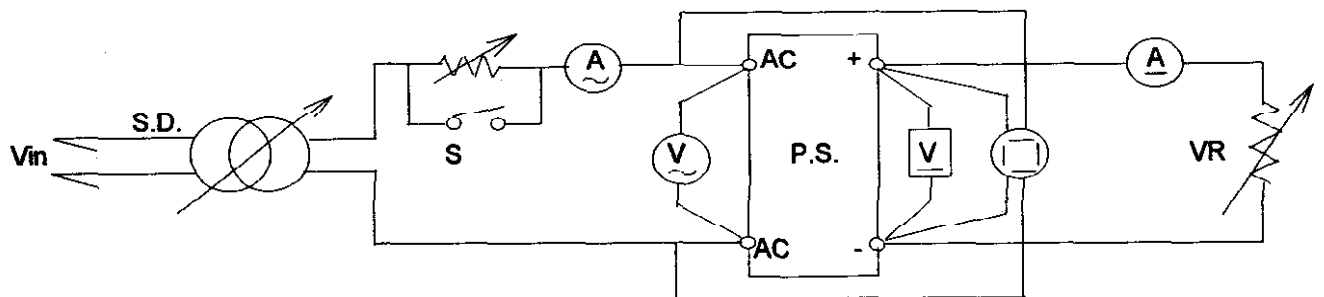
SHANGHAI NEMIC - LAMBDA

(5) Output rise characteristics

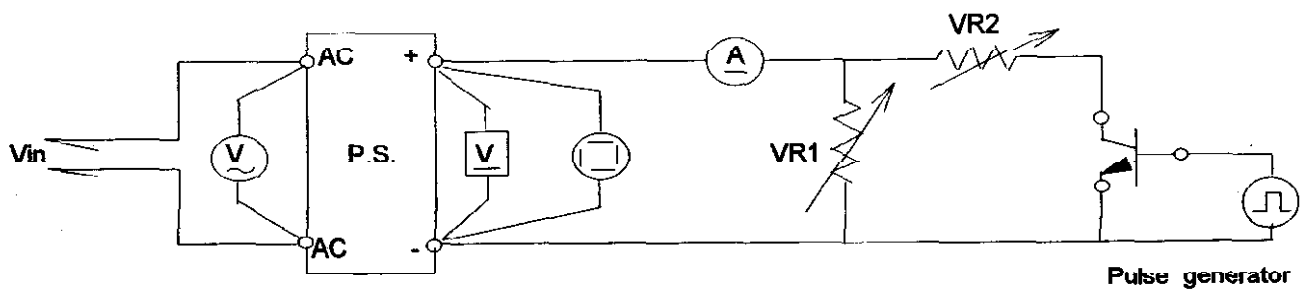


(6) Output fall characteristics same as output rise characteristic

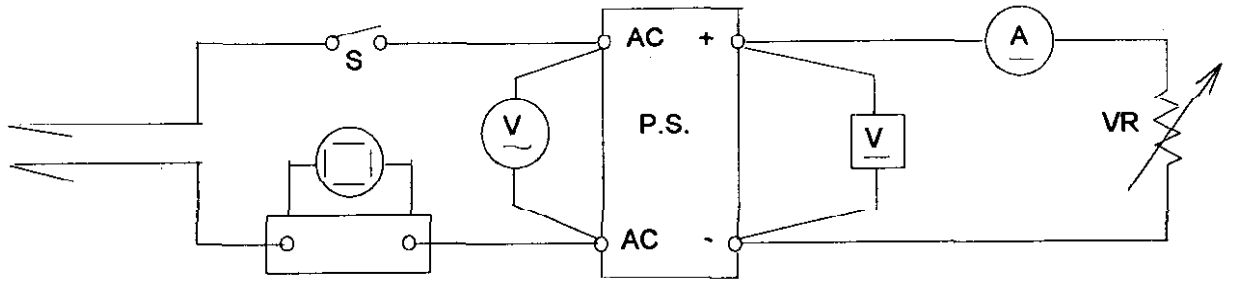
(7) Dynamic line response characteristics



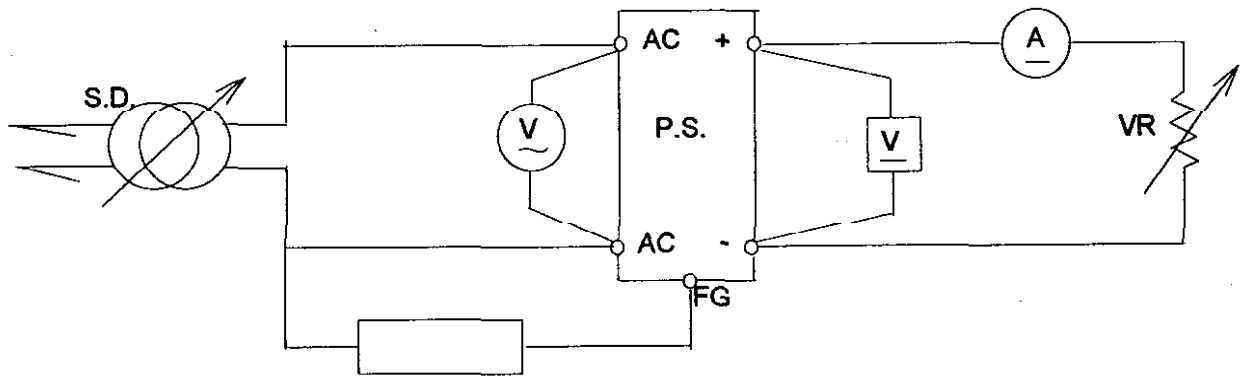
(8) Dynamic load response characteristics



(9) Inrush current characteristics



(10) Leakage current characteristics

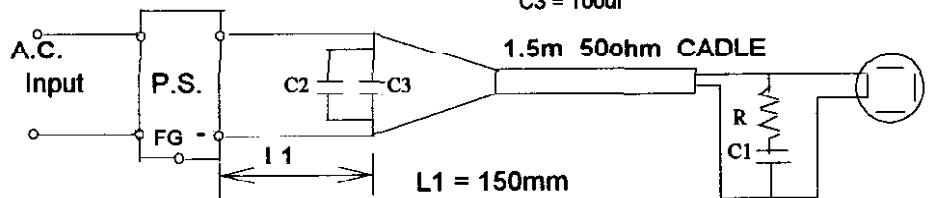


Leakage current meter

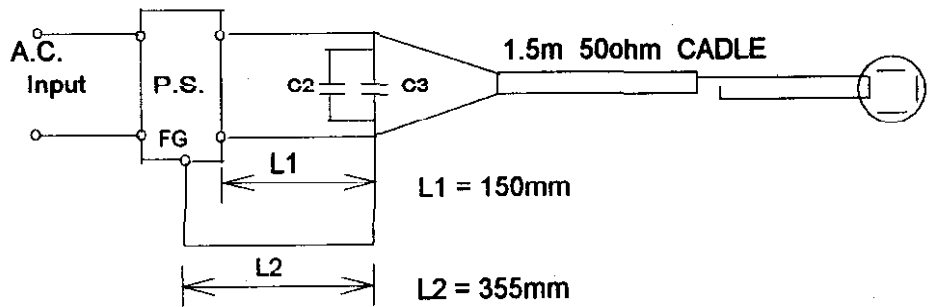
Note: Leakage current measured through a 1Kohm resistor  
Range wed: AC + DC

(11) Output - ripple, noise  
a) NORMAL MODE

- R = 50ohm
- C1 = 4700pf
- C2 = 0.1uf
- C3 = 100uf



b) NORMAL + COMMON MODE



## 2 - 2 List of equipment

	EQUIPMENT USED	MANUFACTURER	MODEL NO.
1	Oscilloscope	HITACHI	V - 1050
2	Digital storage oscilloscope	TEKTRONIX	TDS - 540A
3	Digital multimeter	MASTECH	DM8145A
4	Digital watt/current/volt meter	HIOKI	3186
5	DC Ampere meter	YOKOGAWA	2051
6	Autotransformer	YUYAO	TDGC - 2
7	Variable resistive load	IWASHITA	D - 5
8	Electric load	KIKUSUI	PLZ72W,PLZ300W
9	Digirush currenter	TAKAMISAWA	PSA - 200
10	Current Probe/Amplifier	TEKTRONIX	A6303/AM503B
11	Controlled Temp. Chamber	HIFLEX	FXL400
12	Leakage current meter	YOKOGAWA	3226
13	AC Power Supply	KIKUSUI	PCR - 2000L

SHANGHAI NEMIC - LAMBDA



# REGULATION - Line & Load,Temp. Drift

SWT30-522

## CH1

### 1. Regulation - Line & Load

Conditions  
CH2, CH3  
Ta = 25°C  
Iout = 100%

Iout / Vin	AC 85V	AC 100V	AC 132V	Line Regulation	
Min Load	5.051V	5.049V	5.047V	0.004V	0.08%
50%	5.031V	5.030V	5.030V	0.001V	0.02%
100%	5.005V	5.006V	5.009V	0.004V	0.08%
Load	0.046V	0.043V	0.038V		
Regulation	0.92%	0.86%	0.76%		

### 2.. Temperature Drift

Conditions  
Vin=100VAC  
Iout=100%

Ta(°C)	0	25	50	Temp. Stability	
Vout	5.008V	5.006V	5.002V	0.006V	0.12%

## CH2

### 1. Regulation - Line & Load

Conditions  
CH1, CH3:  
Ta = 25°C  
Iout ≈ 100%

Iout / Vin	AC 85V	AC 100V	AC 132V	Line Regulation	
Min Load	12.165V	12.130V	12.099V	0.066V	0.55%
50%	12.118V	12.080V	12.042V	0.076V	0.63%
100%	12.024V	11.994V	11.964V	0.060V	0.55%
Load	0.141V	0.136V	0.135V		
Regulation	1.18%	1.13%	1.13%		

### 2.. Temperature Drift

Conditions  
Vin=100VAC  
Iout=100%

Ta(°C)	0	25	50	Temp. Stability	
Vout	11.998V	11.994V	11.972V	0.026V	0.22%

## CH3

### 1. Regulation - Line & Load

Conditions  
CH1, CH2:  
Ta = 25°C  
Iout = 100%

Iout / Vin	AC 85V	AC 100V	AC 132V	Line Regulation	
Min Load	-11.956V	-11.952V	-11.950V	0.005V	0.04%
50%	-11.945V	-11.938V	-11.942V	0.003V	0.03%
100%	-11.933V	-11.929V	-11.930V	0.004V	0.03%
Load	0.023V	0.023V	0.021V		
Regulation	0.19%	0.19%	0.18%		

### 2.. Temperature Drift

Conditions  
Vin=100VAC  
Iout=100%

Ta(°C)	0	25	50	Temp. Stability	
Vout	-11.968V	-11.929V	-11.892V	0.076V	0.63%

SHANGHAI NEMIC-LAMBDA

# REGULATION - Line & Load,Temp. Drift

SWT30-522

## CH1

### 1. Regulation - Line & Load

Conditions Ta = 25°C  
CH2,CH3: Iout = 100%

Iout / Vin	AC 170V	AC 200V	AC 265V	Line Regulation	
Min Load	5.047V	5.047V	5.047V	0.000V	0.00%
50%	5.056V	5.031V	5.032V	0.001V	0.02%
100%	5.011V	5.013V	5.014V	0.003V	0.06%
Load Regulation	0.036V 0.72%	0.034V 0.68%	0.033V 0.66%		

### 2.. Temperature Drift

Conditions Vin=200VAC  
Iout=100%

Ta(°C)	0	25	50	Temp. Stability	
Vout	5.015V	5.013V	5.007V	0.008V	0.16%

## CH2

### 1. Regulation - Line & Load

Conditions Ta = 25°C  
CH1,CH3: Iout = 100%

Iout / Vin	AC 170V	AC 200V	AC 265V	Line Regulation	
Min Load	12.084V	12.085V	12.084V	0.001V	0.00%
50%	12.014V	12.009V	12.002V	0.012V	0.10%
100%	11.944V	11.934V	11.924V	0.020V	0.17%
Load Regulation	0.140V 1.17%	0.151V 1.26%	0.160V 1.33%		

### 2.. Temperature Drift

Conditions Vin=200VAC  
Iout=100%

Ta(°C)	0	25	50	Temp. Stability	
Vout	11.944V	11.934V	11.915V	0.029V	0.24%

## CH3

### 1. Regulation - Line & Load

Conditions Ta = 25°C  
CH1,CH2: Iout = 100%

Iout / Vin	AC 170V	AC 200V	AC 265V	Line Regulation	
Min Load	-11.944V	-11.946V	-11.941V	0.005V	0.04%
50%	-11.932V	-11.935V	-11.927V	0.005V	0.04%
100%	-11.922V	-11.925V	-11.916V	0.006V	0.05%
Load Regulation	0.022V 0.18%	0.023V 0.19%	0.025V 0.20%		

### 2.. Temperature Drift

Conditions Vin=200VAC  
Iout=100%

Ta(°C)	0	25	50	Temp. Stability	
Vout	-11.964V	-11.925V	-11.886V	0.078V	0.65%

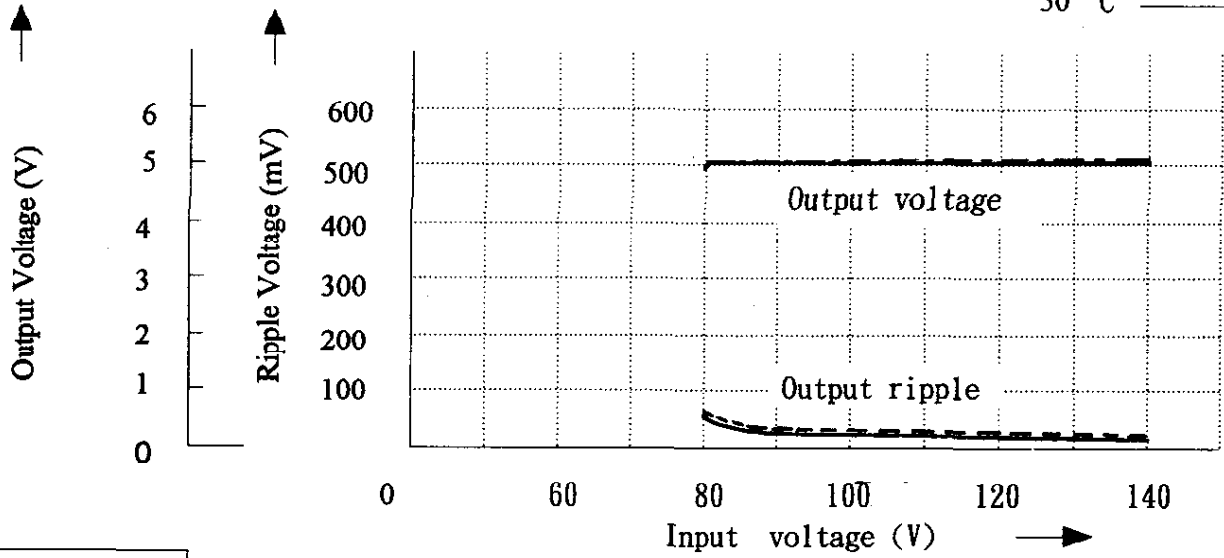
SHANGHAI NEMIC-LAMBDA

# OUTPUT VOLTAGE AND RIPPLE v.s INPUT VOLTAGE

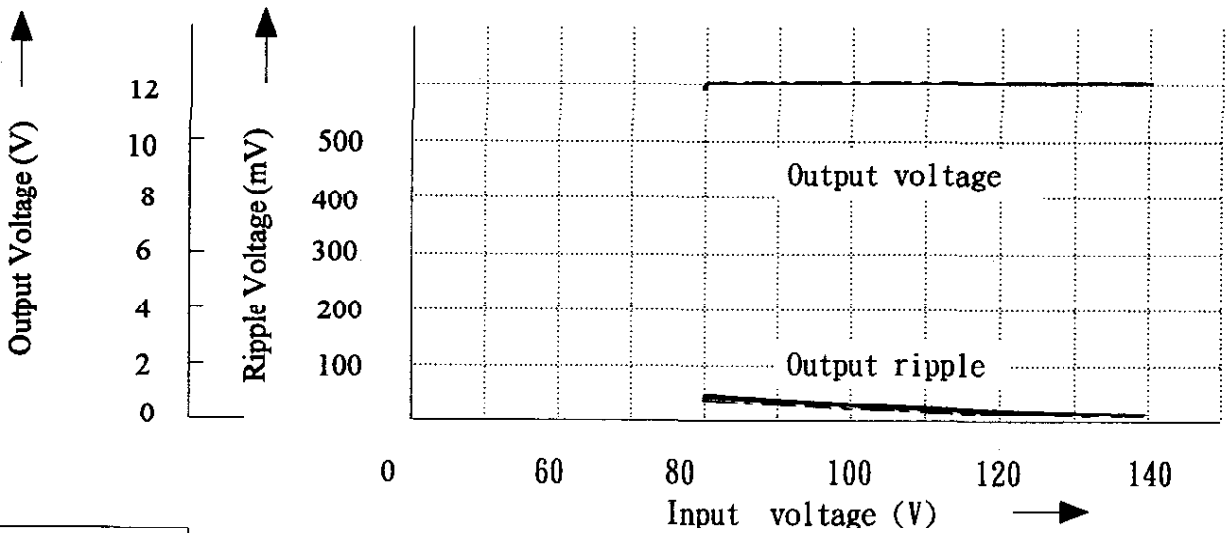
SWT30 - 522

Conditions  $I_{out} = 100\%$   
 $T_a : 0\text{ }^{\circ}\text{C}$  — — —  
 $25\text{ }^{\circ}\text{C}$  - - - -  
 $50\text{ }^{\circ}\text{C}$  — — —

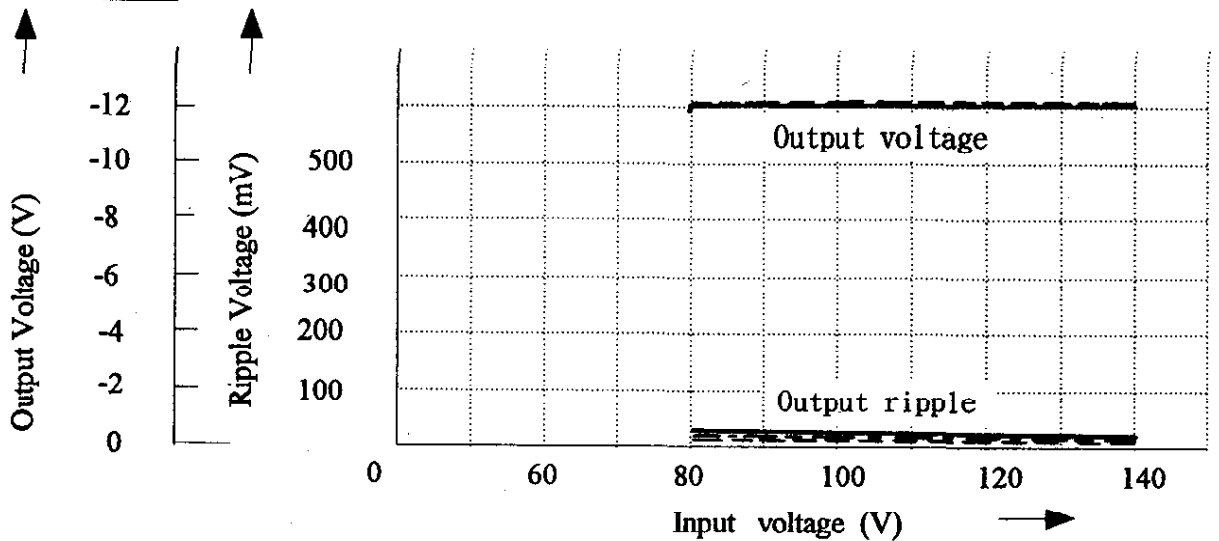
CH1



CH2



CH3



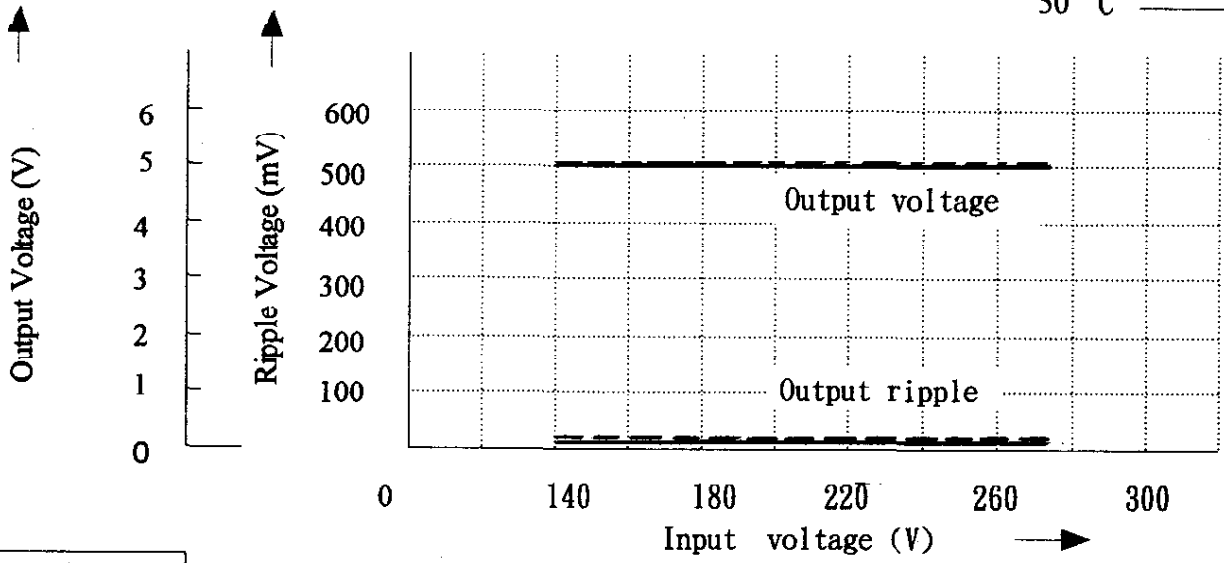
# OUTPUT VOLTAGE AND RIPPLE v.s

SWT30 - 522

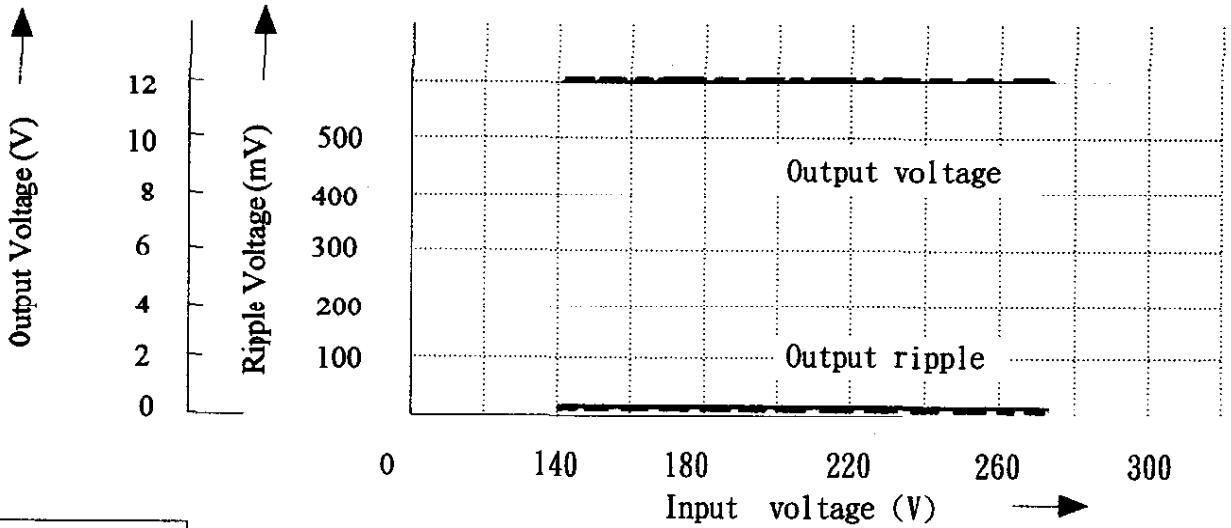
## INPUT VOLTAGE

Conditions Iout = 100%  
 Ta : 0 °C — — —  
 25 °C — — — —  
 50 °C — — — — —

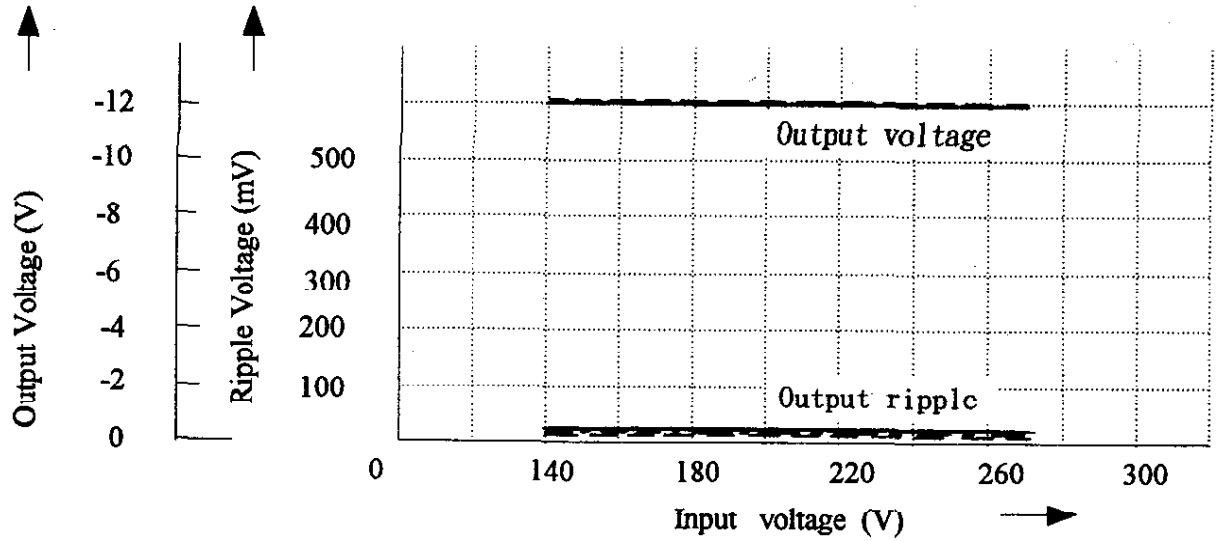
CH1



CH2



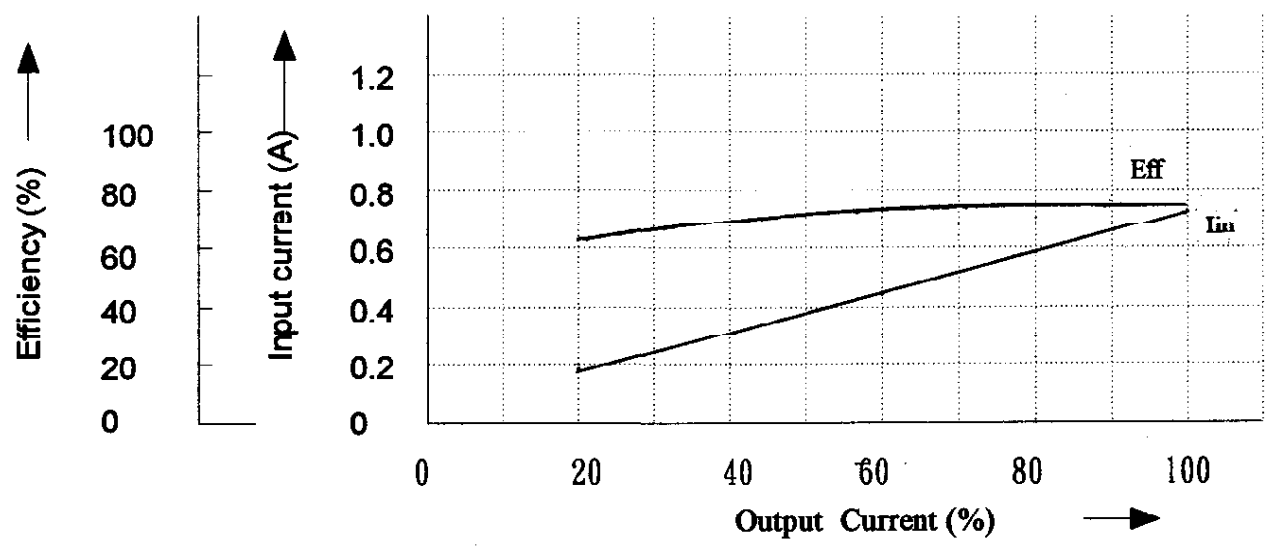
CH3



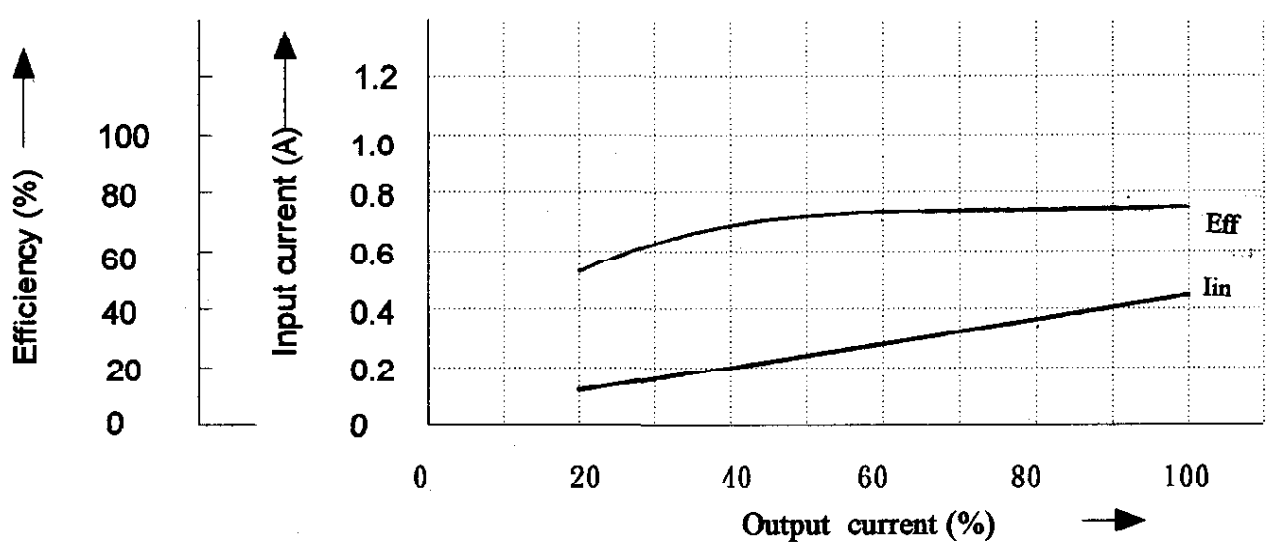
**OUTPUT CURRENT**

Conditions  $V_{in a} = 100VAC$   
 $V_{in b} = 200VAC$   
 $T_a = 25^\circ C$

**A:** 100VAC



**B:** 200VAC

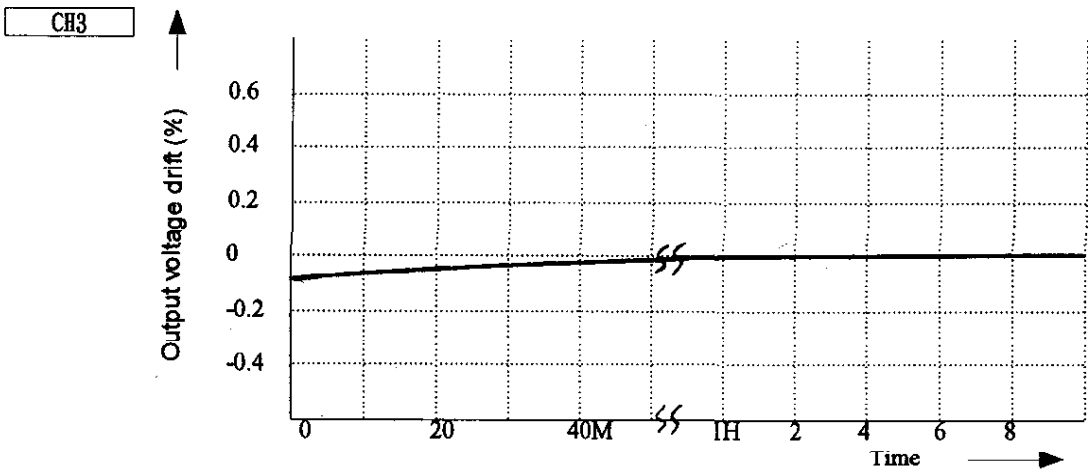
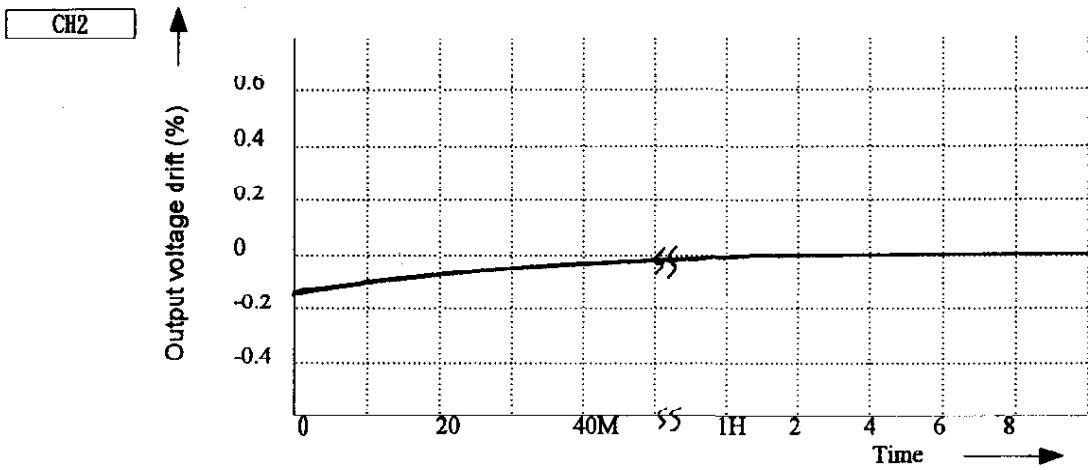
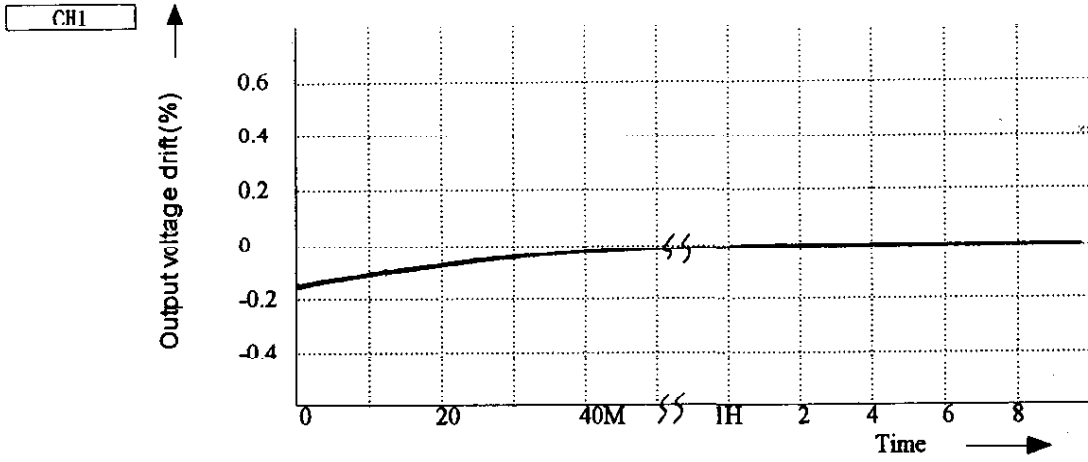


# WARM UP DRIFT

SW130 - 522

Conditions

$V_{in} = 100VAC$   
 $I_{out} = 100\%$   
 $T_a = 25\text{ }^{\circ}C$



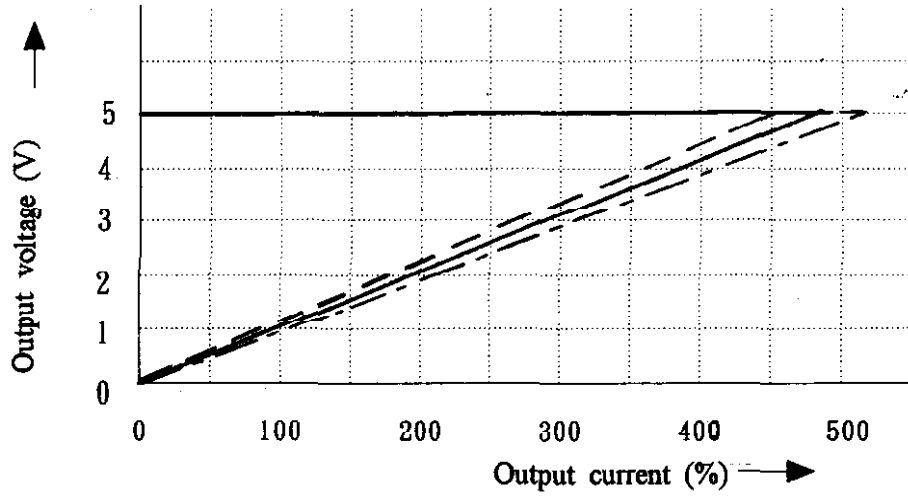
# OCP CHARACTERISTICS v.s INPUT VOLTAGE

**SWT30 - 522**

Conditions  $T_a = 25\text{ }^\circ\text{C}$   
 $V_{in}$ : 85VAC — — —  
 100VAC — — —  
 132VAC - - - -

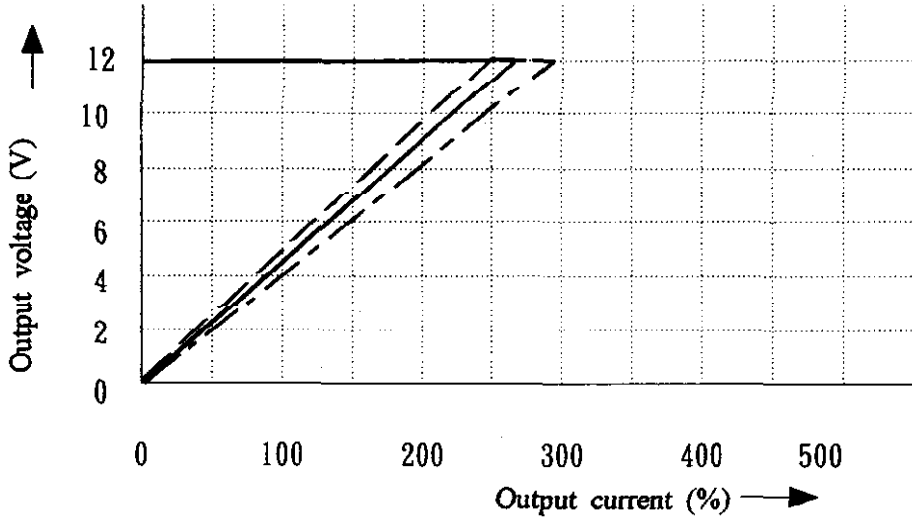
**CH1**

$I_{out}$ :  
CH2,3:100%



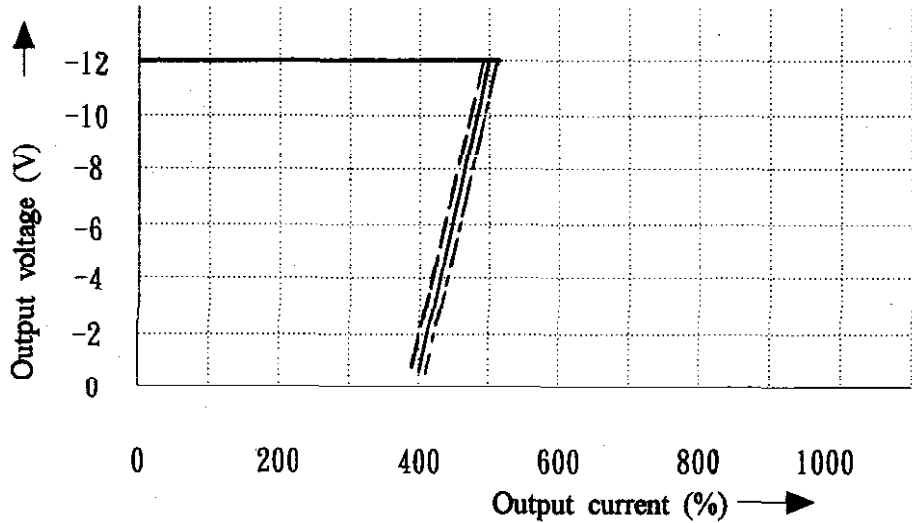
**CH2**

$I_{out}$ :  
CH1,3:100%



**CH3**

$I_{out}$ :  
CH1,2:100%



# OCP CHARACTERISTICS v.s INPUT VOLTAGE

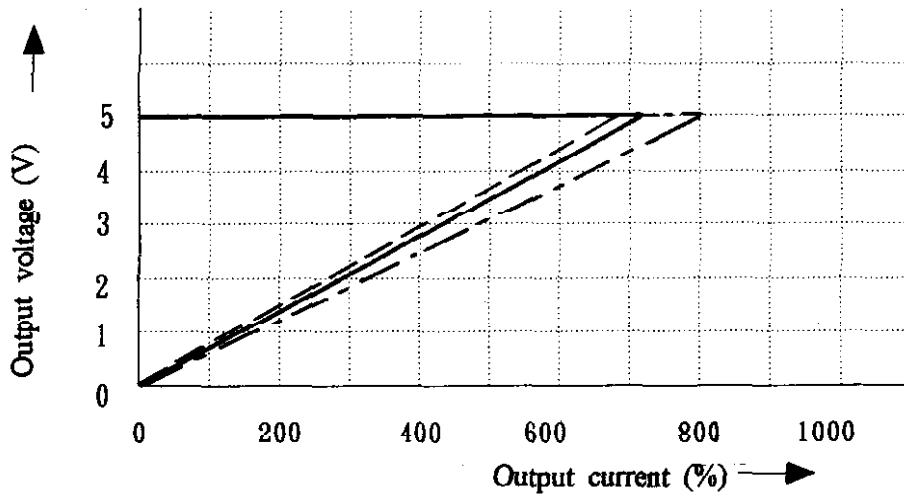
SWT30 - 522

Conditions  $T_a = 25\text{ }^\circ\text{C}$

$V_{in}$  : 170VAC — — —  
 200VAC — — —  
 265VAC — — —

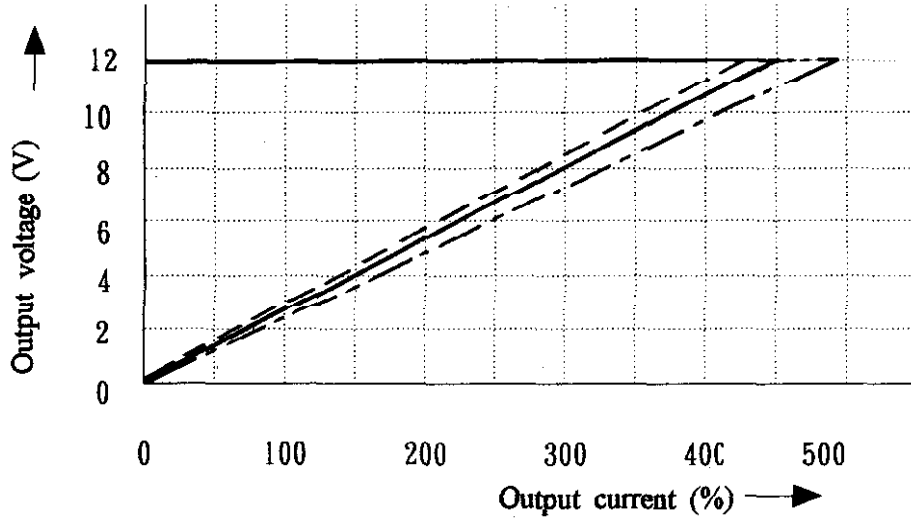
CH1

$I_{out}$ :  
CH2,3:100%



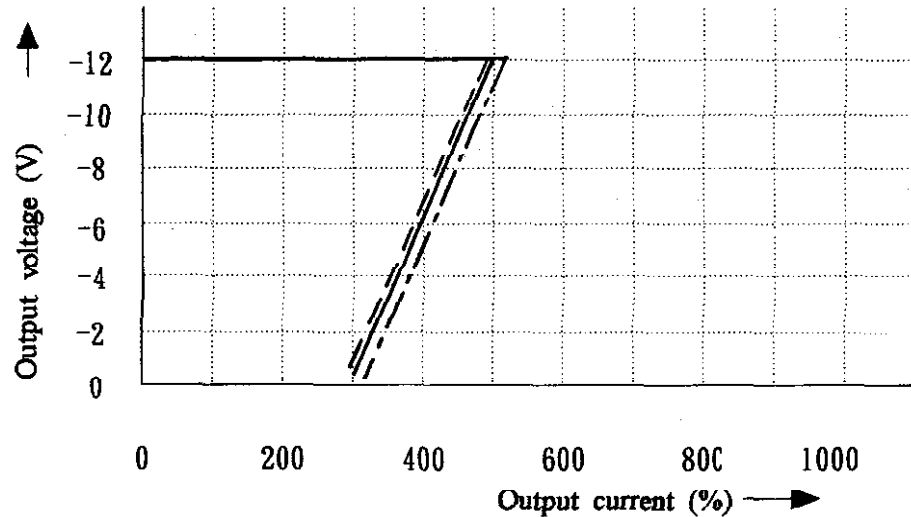
CH2

$I_{out}$ :  
CH1,3:100%



CH3

$I_{out}$ :  
CH1,2:100%





# OCP CHARACTERISTICS v.s TEMP.

Conditions

SWT30 - 522

V<sub>in</sub> = 100VAC

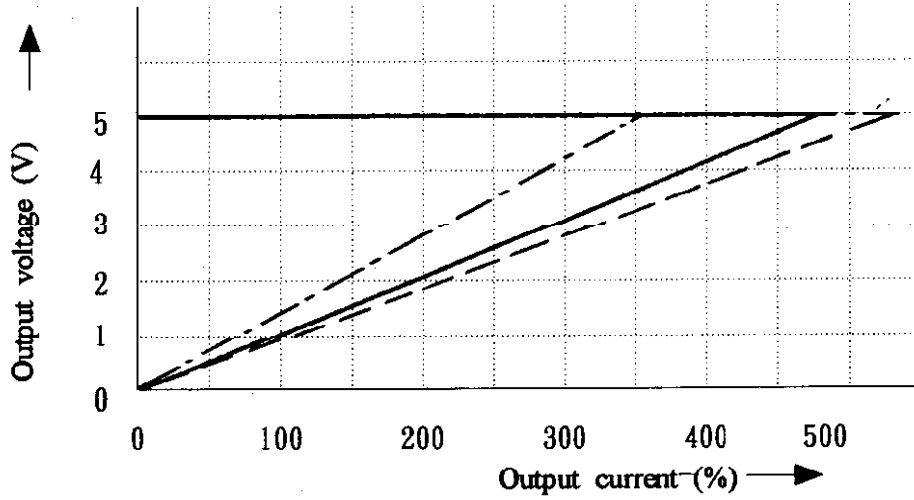
T<sub>a</sub> : 0 °C ———

25 °C ———

50 °C - - - - -

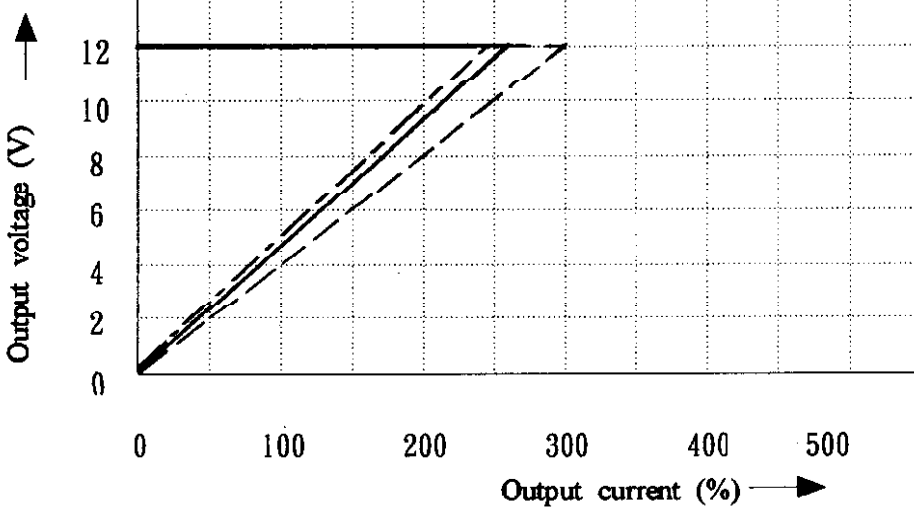
CH1

I<sub>out</sub>:  
CH2,3:100%



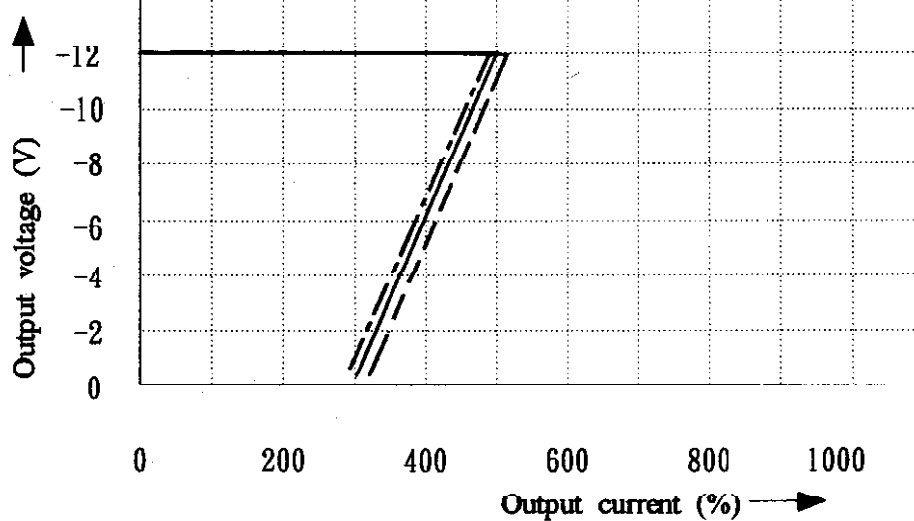
CH2

I<sub>out</sub>:  
CH1,3:100%



CH3

I<sub>out</sub>:  
CH1,2:100%



# O.V.P CHARACTERISTICS

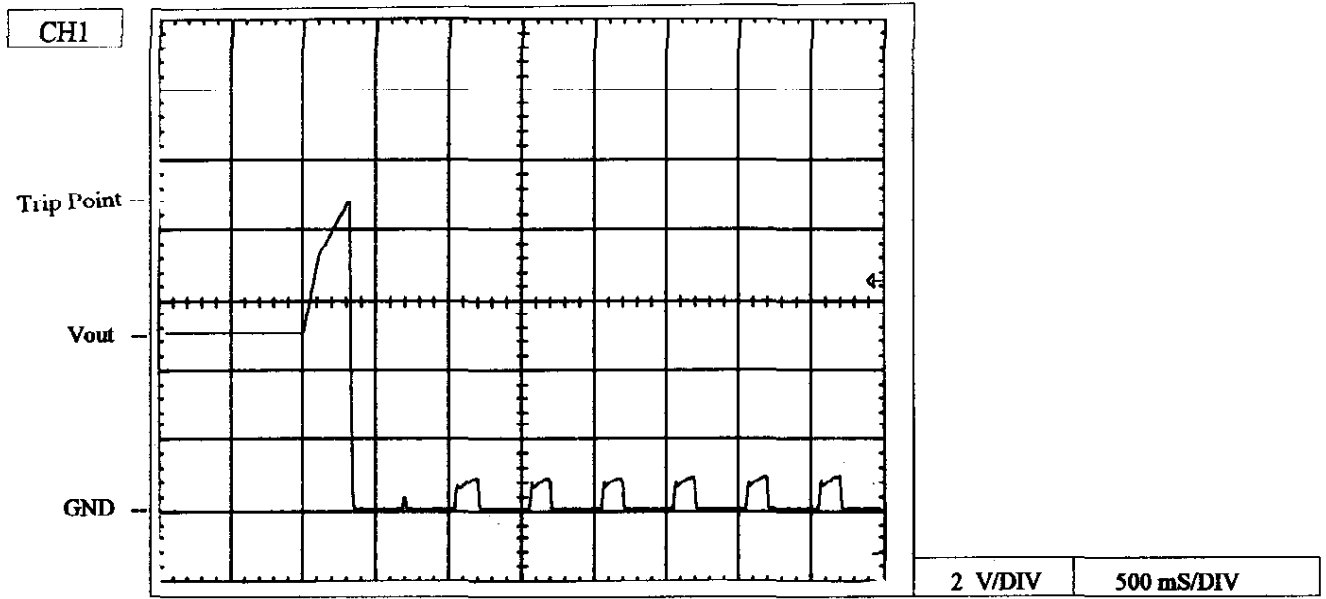
SWT30- \*

Conditions

$V_{in} = 100VAC$

$I_{out} = \text{Min Load}$

$T_a = 25^\circ C$

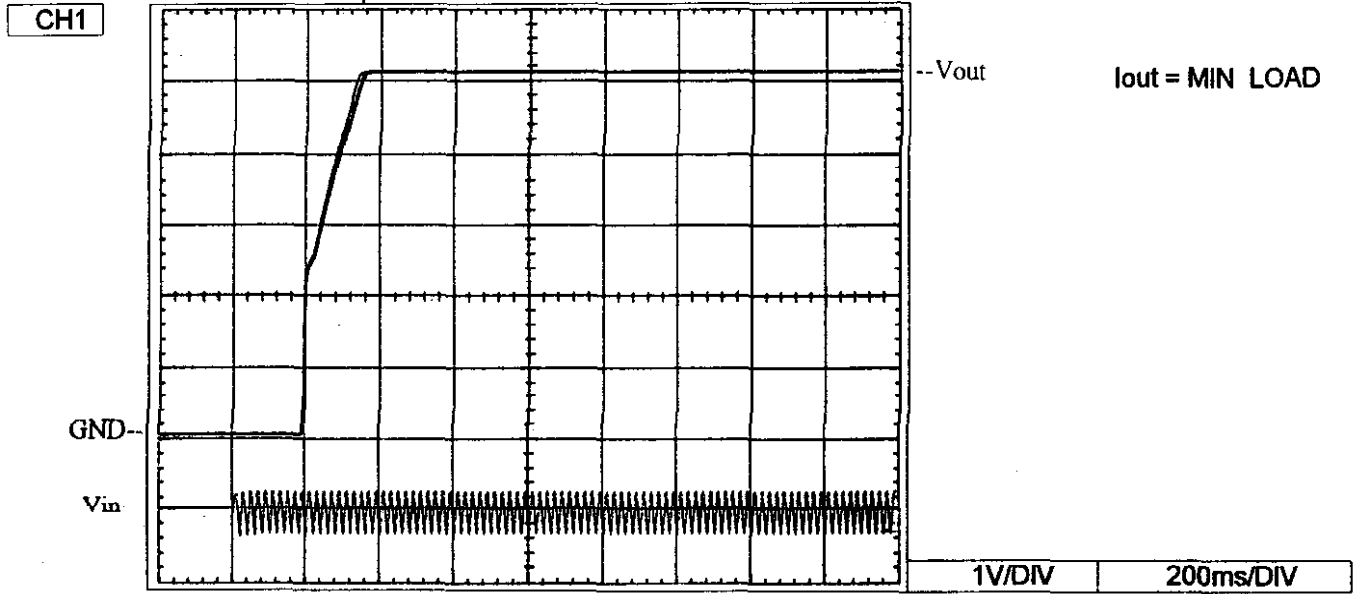


SHANGHAI NEMIC-LAMBDA

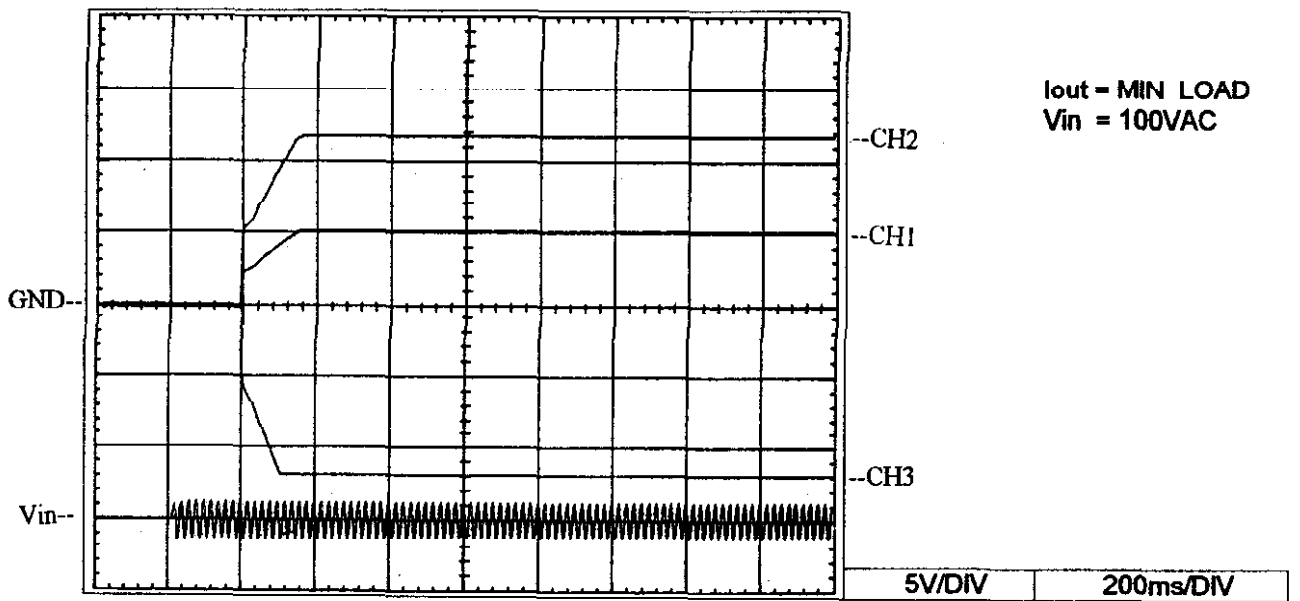
**OUTPUT RISE TIME**

Conditions

- (A)  $V_{in} = 85VAC$
- (B)  $V_{in} = 100VAC$
- (C)  $V_{in} = 132VAC$
- $T_a = 25^\circ C$



$I_{out} = MIN\ LOAD$

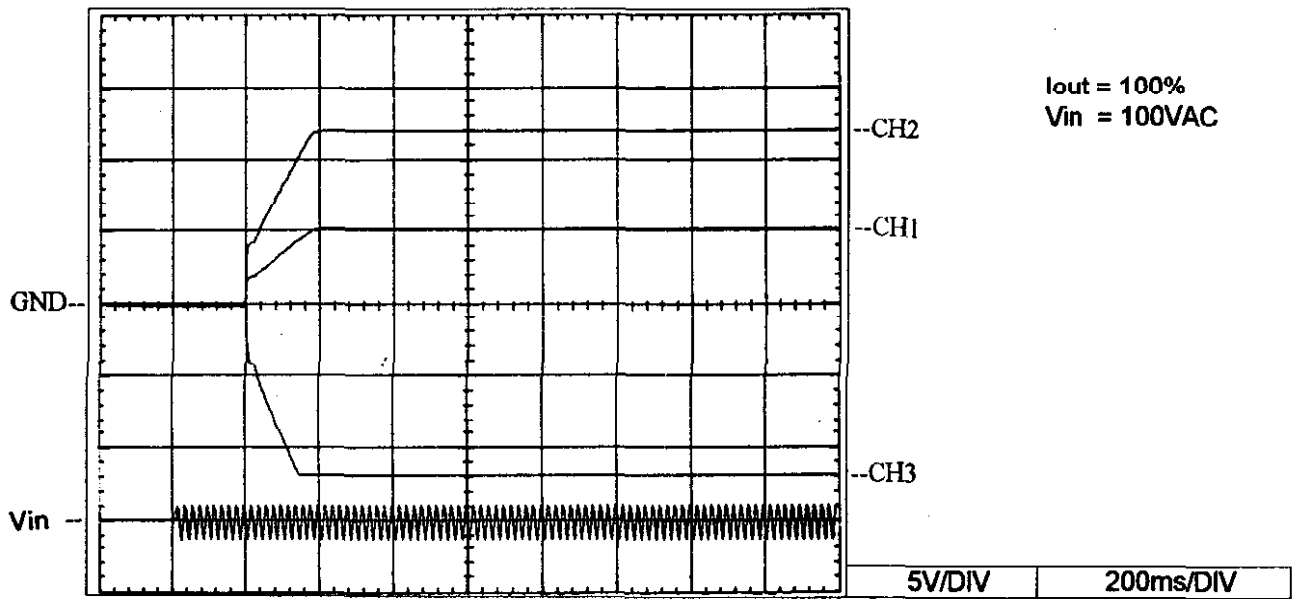
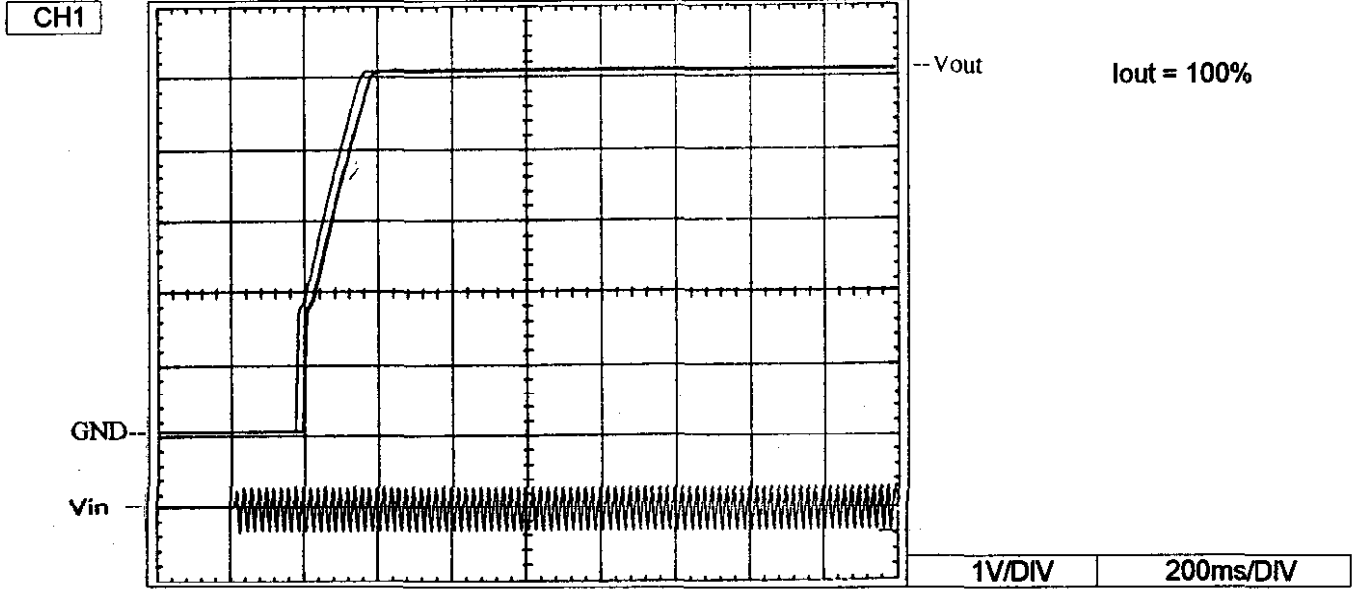


$I_{out} = MIN\ LOAD$   
 $V_{in} = 100VAC$

# OUTPUT RISE TIME

Conditions

- (A)  $V_{in} = 85VAC$
- (B)  $V_{in} = 100VAC$
- (C)  $V_{in} = 132VAC$
- $T_a = 25^\circ C$

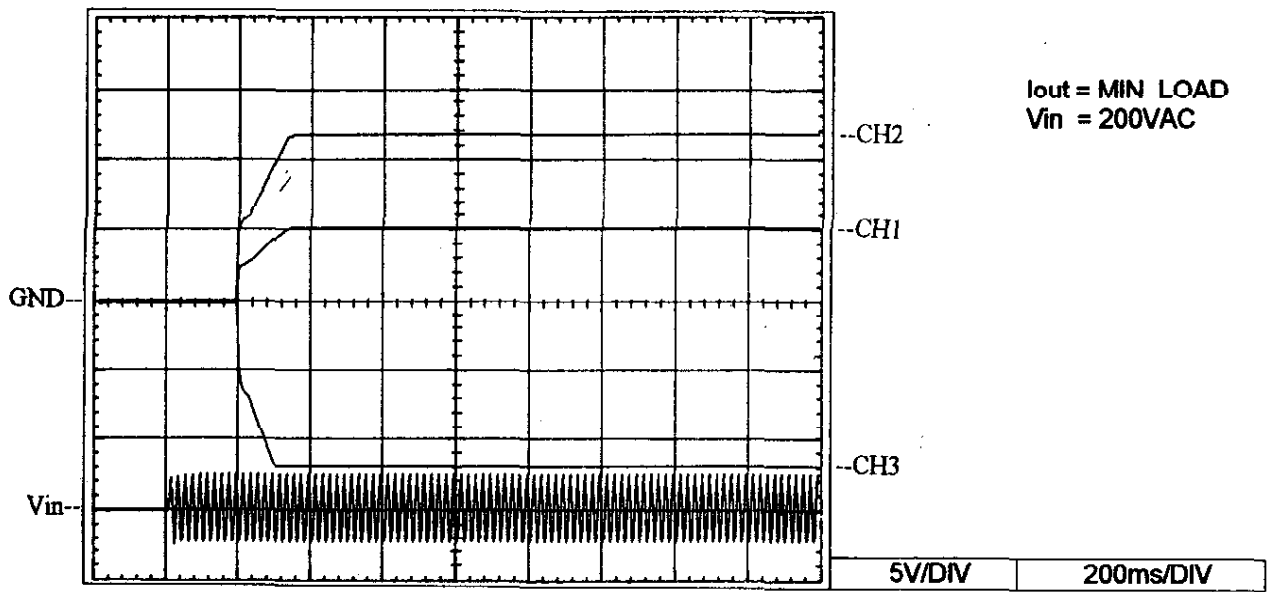
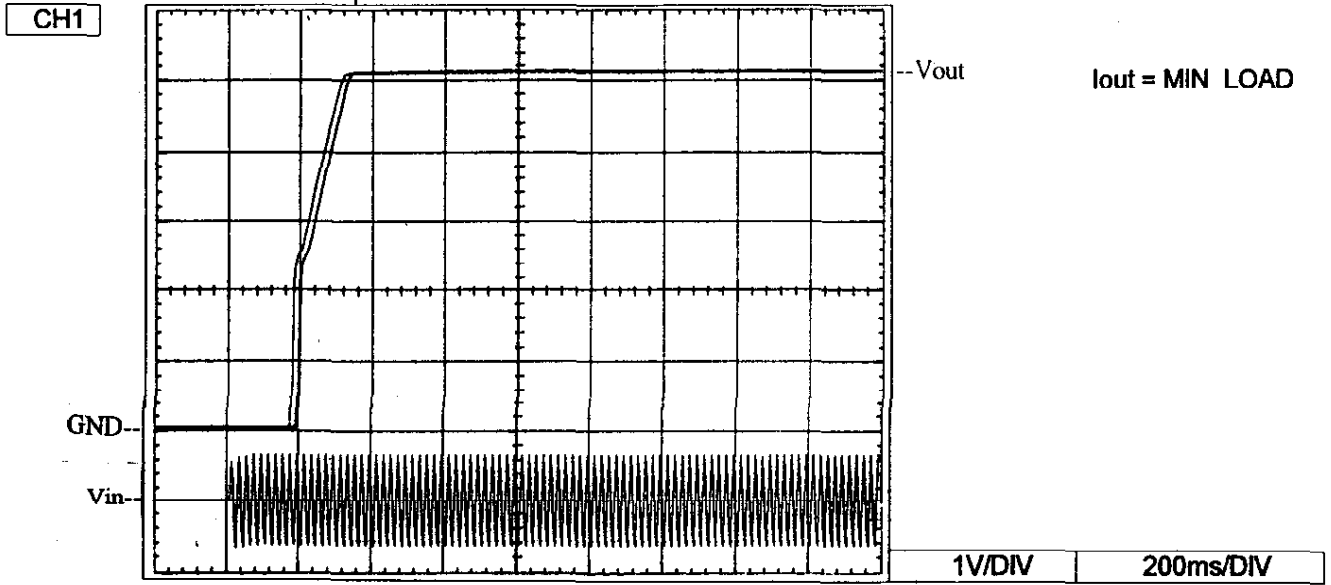


# OUTPUT RISE TIME

Conditions

- (A)  $V_{in} = 170VAC$
- (B)  $V_{in} = 200VAC$
- (C)  $V_{in} = 265VAC$
- $T_a = 25^\circ C$

$I_{out} = MIN\ LOAD$

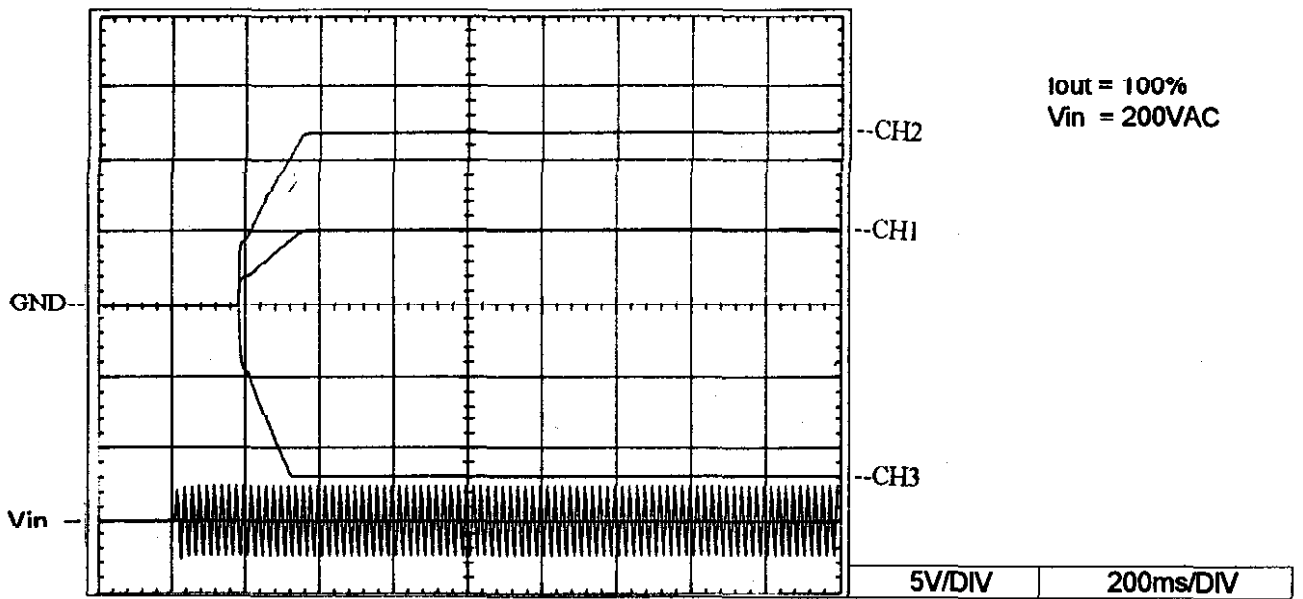
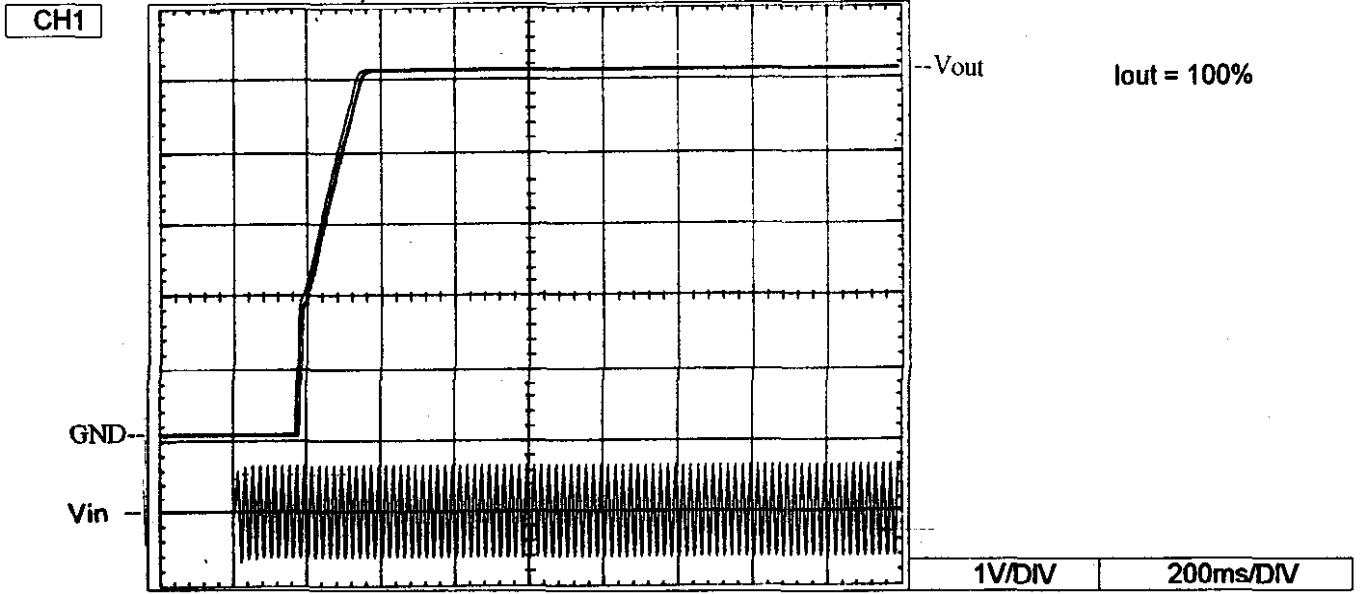


$I_{out} = MIN\ LOAD$   
 $V_{in} = 200VAC$

# OUTPUT RISE TIME

Conditions

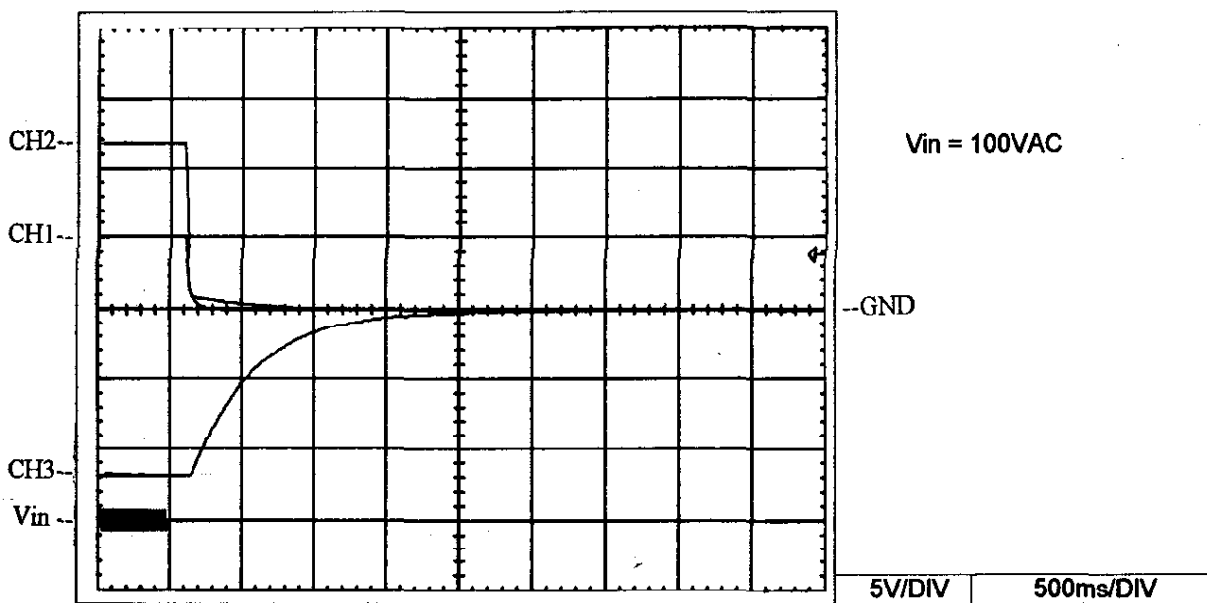
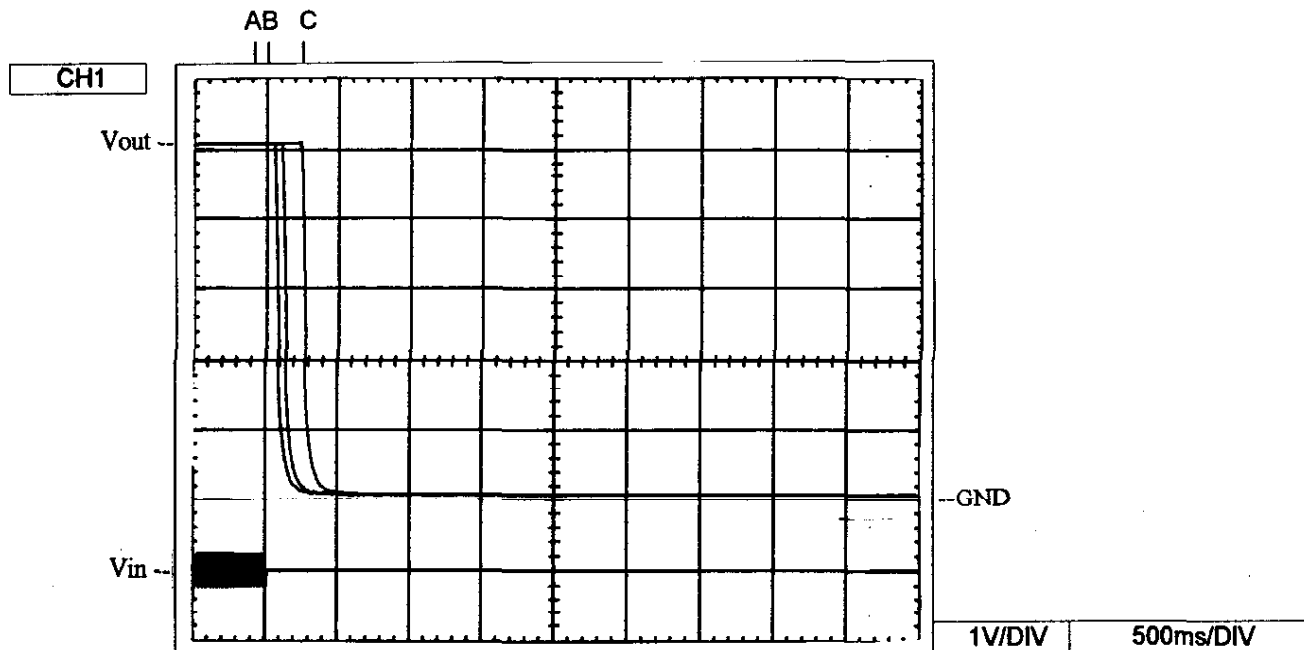
- (A)  $V_{in} = 170VAC$
- (B)  $V_{in} = 200VAC$
- (C)  $V_{in} = 265VAC$
- $T_a = 25\text{ }^\circ C$



**OUTPUT FALL TIME**

Conditions

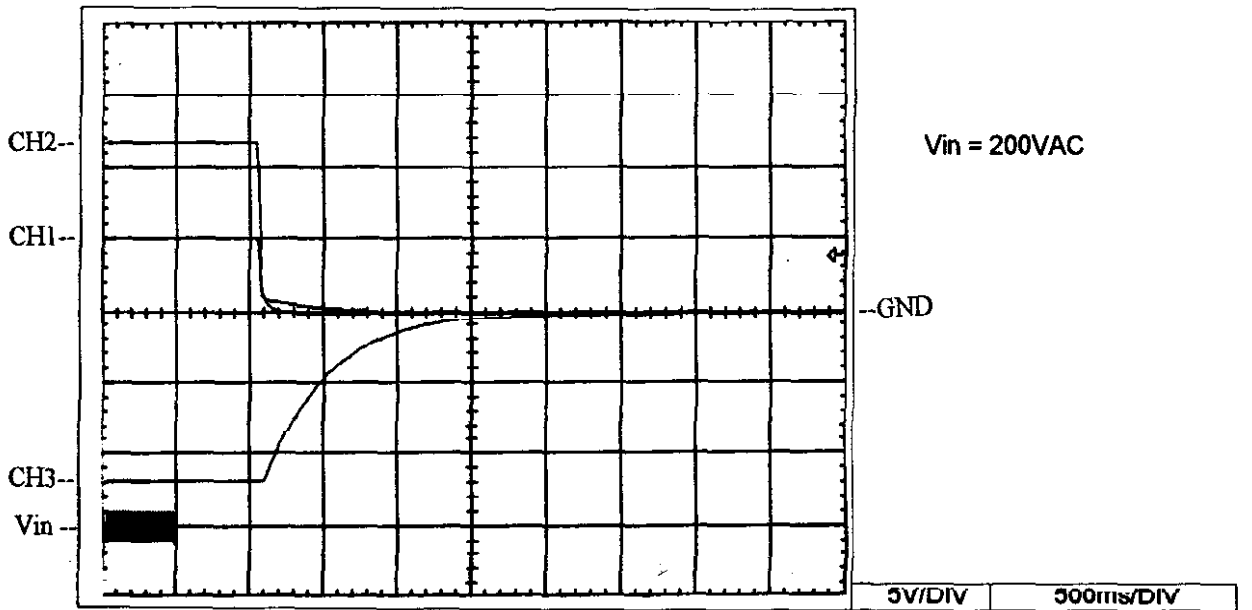
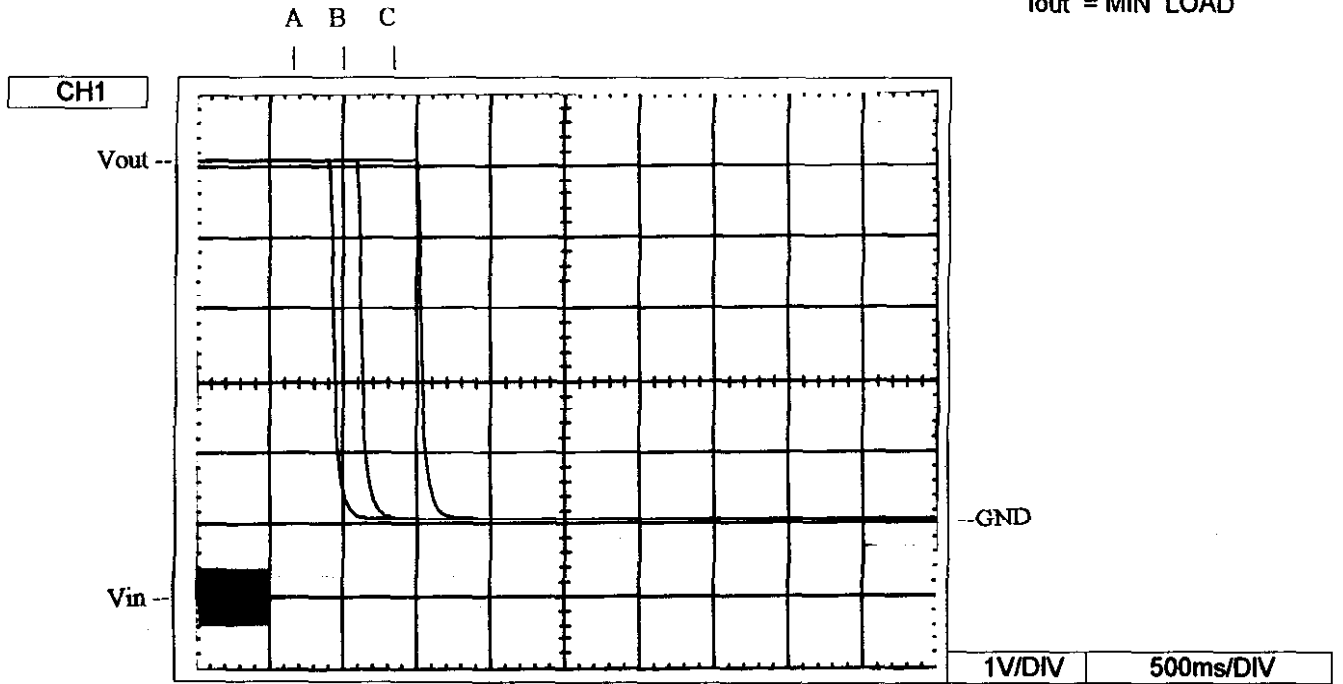
- (A)  $V_{in} = 85VAC$
- (B)  $V_{in} = 100VAC$
- (C)  $V_{in} = 132VAC$
- $T_a = 25^{\circ}C$
- $I_{out} = MIN\ LOAD$



**OUTPUT FALL TIME**

Conditions

- (A)  $V_{in} = 170VAC$
- (B)  $V_{in} = 200VAC$
- (C)  $V_{in} = 265VAC$
- $T_a = 25^{\circ}C$
- $I_{out} = MIN\ LOAD$

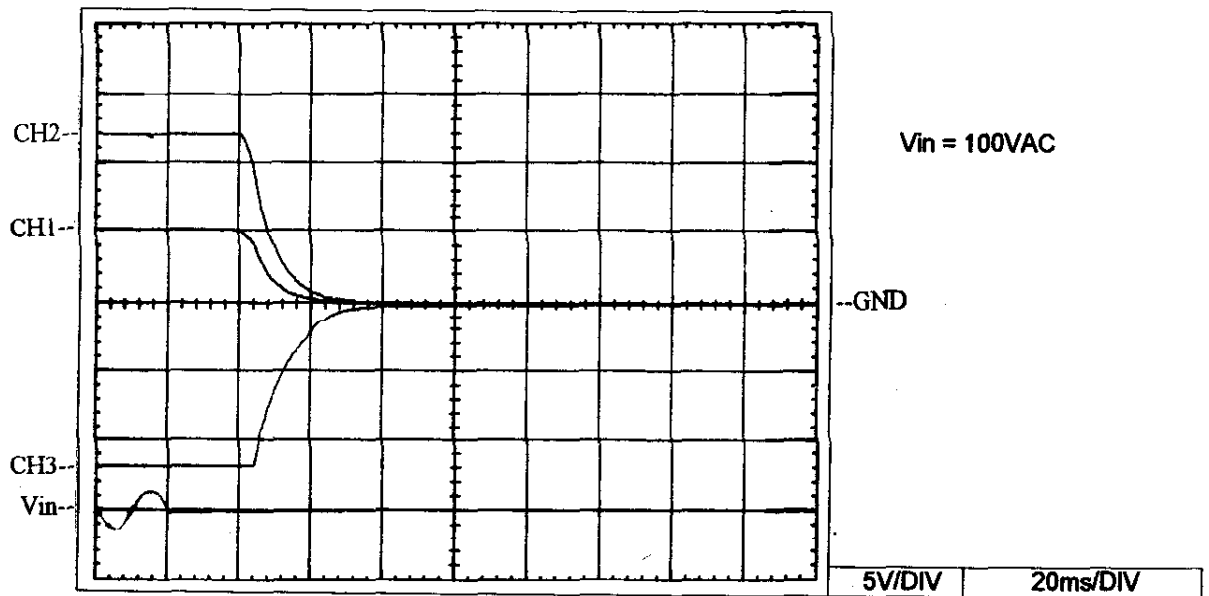
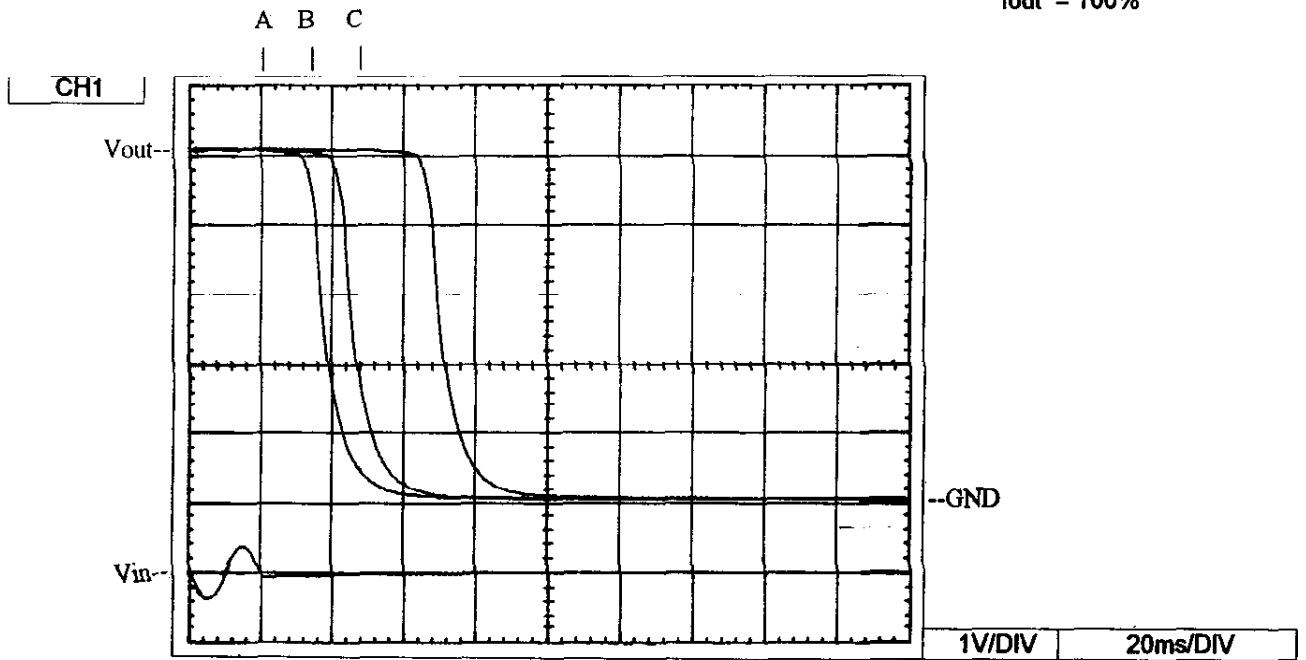




**OUTPUT FALL TIME**

Conditions

- (A)  $V_{in} = 85VAC$
- (B)  $V_{in} = 100VAC$
- (C)  $V_{in} = 132VAC$
- $T_a = 25^{\circ}C$
- $I_{out} = 100\%$

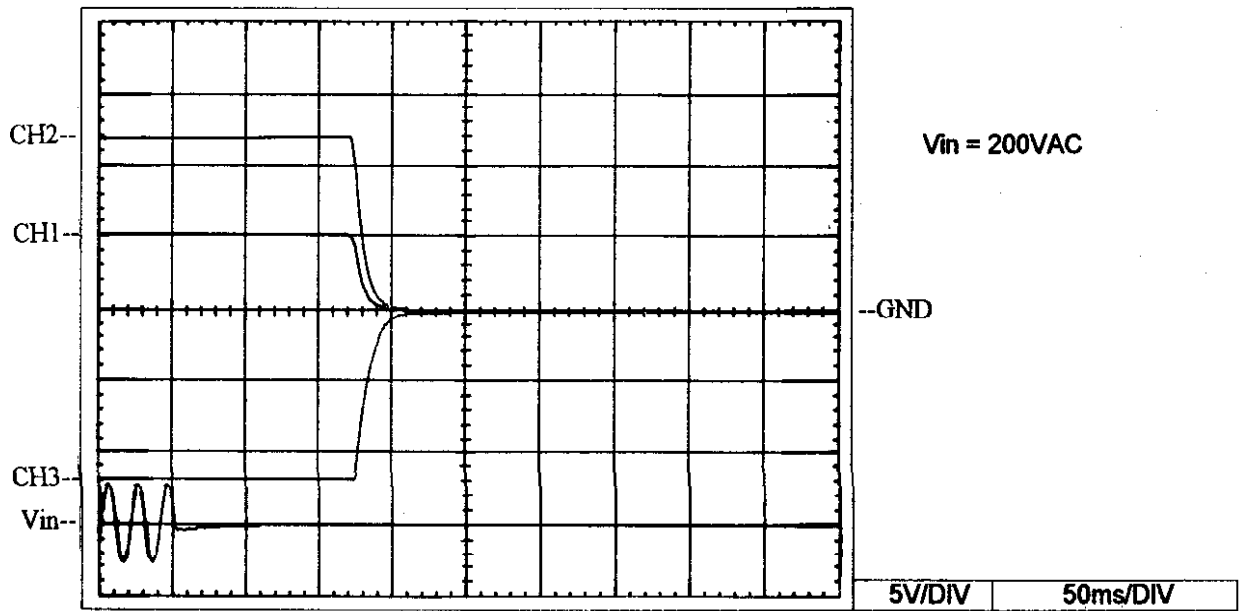
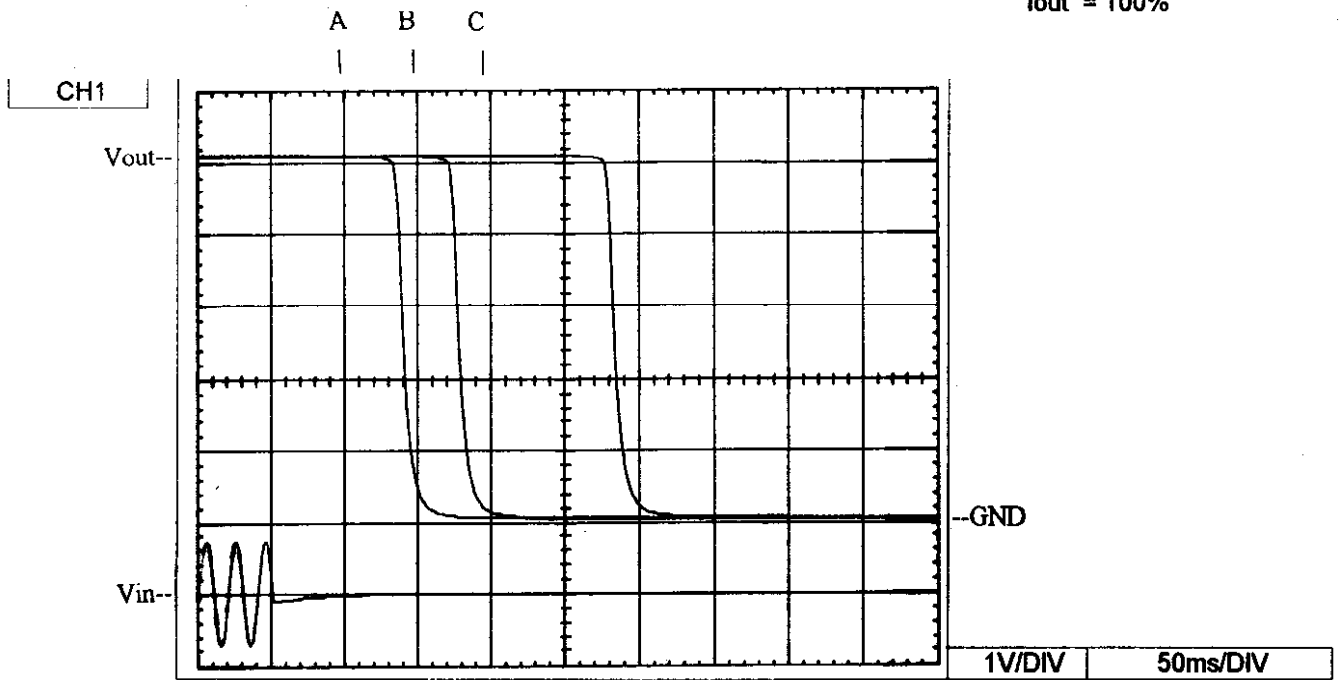


SHANGHAI NEMIC - LAMBDA

**OUTPUT FALL TIME**

Conditions

- (A)  $V_{in} = 170VAC$
- (B)  $V_{in} = 200VAC$
- (C)  $V_{in} = 265VAC$
- $T_a = 25^{\circ}C$
- $I_{out} = 100\%$

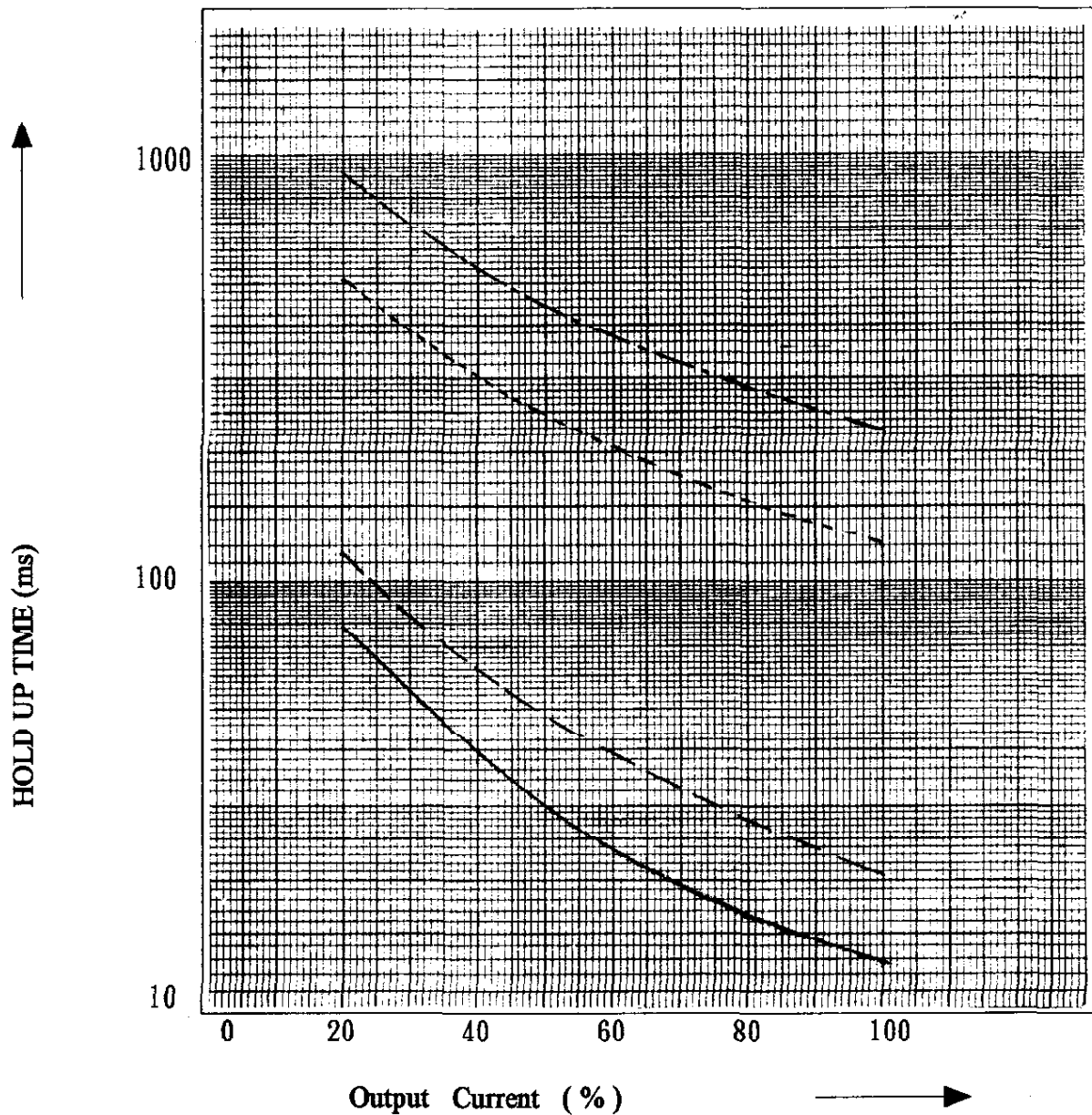


SHANGHAI NEMIC - LAMBDA

# HOLD UP TIME

Conditions

$V_{in} = 85VAC$  ———  
100VAC ———  
200VAC ———  
265VAC ———  
 $T_a = 25^\circ C$



SHANGHAI NEMIC-LAMBDA

# DYNAMIC LINE RESPONSE

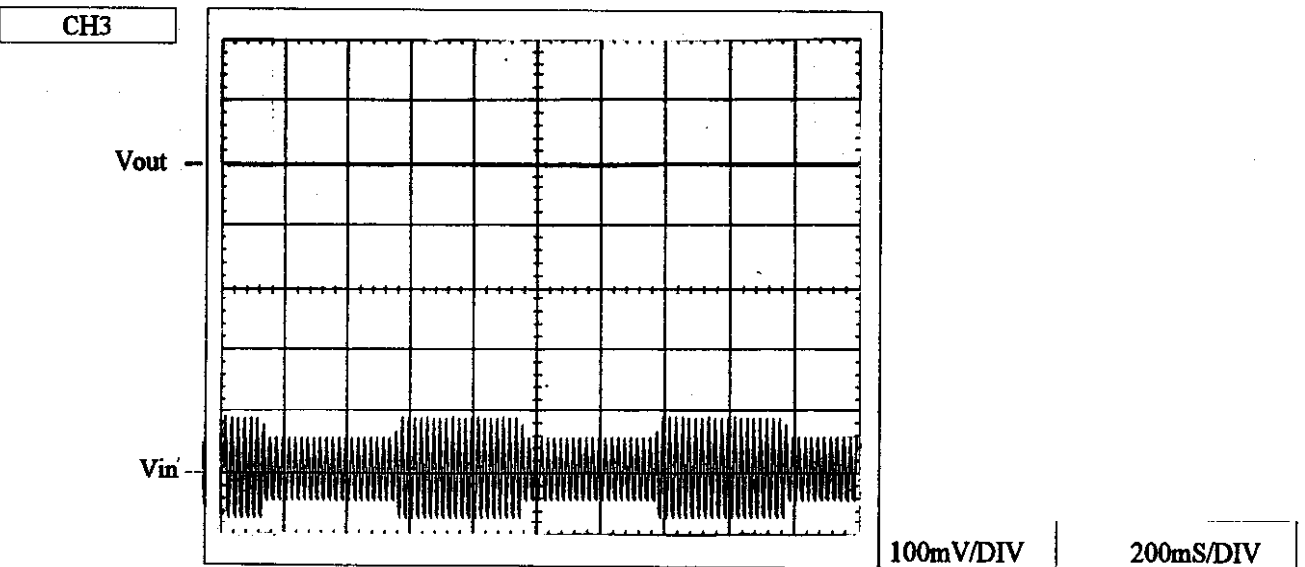
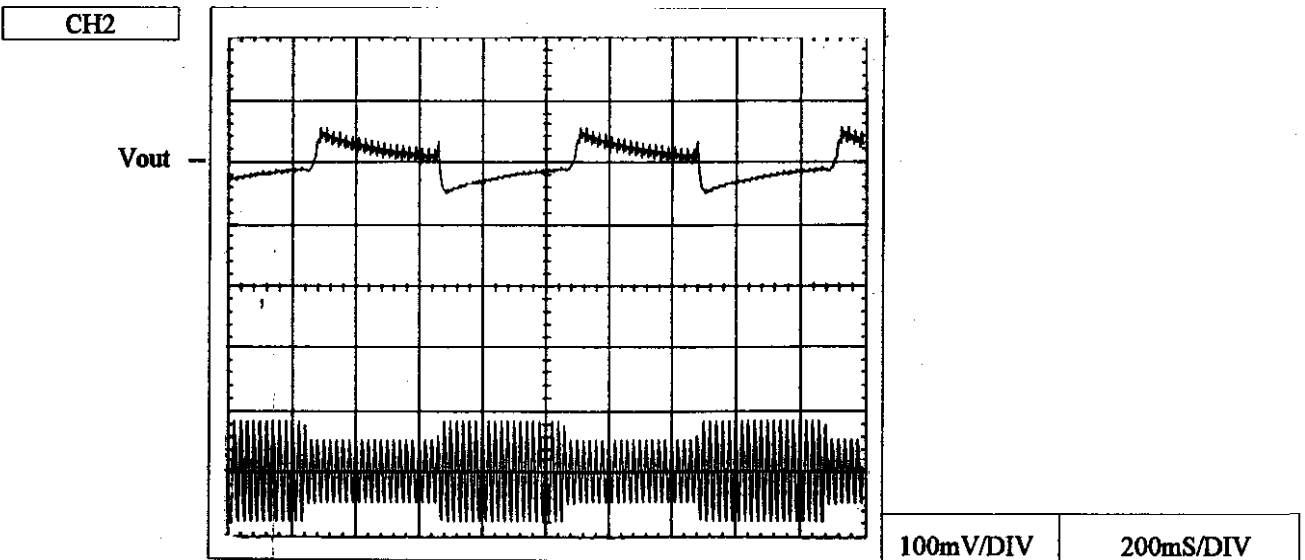
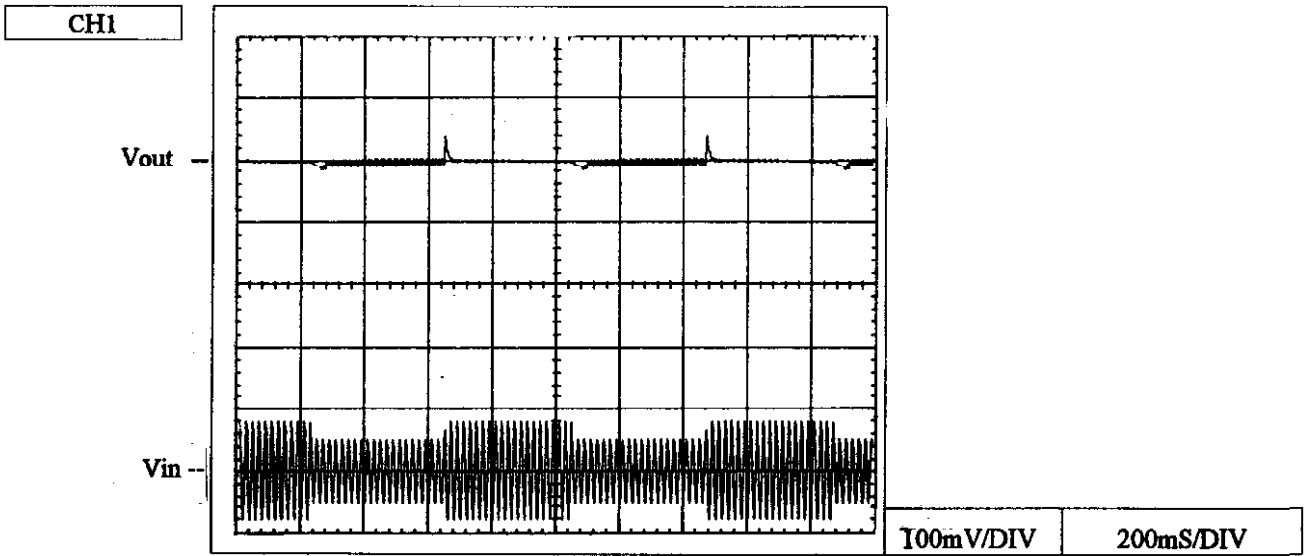
SWT30-522

Conditions

I<sub>out</sub> = 100%

T<sub>a</sub> = 25 °C

V<sub>in</sub> : 85VAC ← → 132VAC



# DYNAMIC LINE RESPONSE

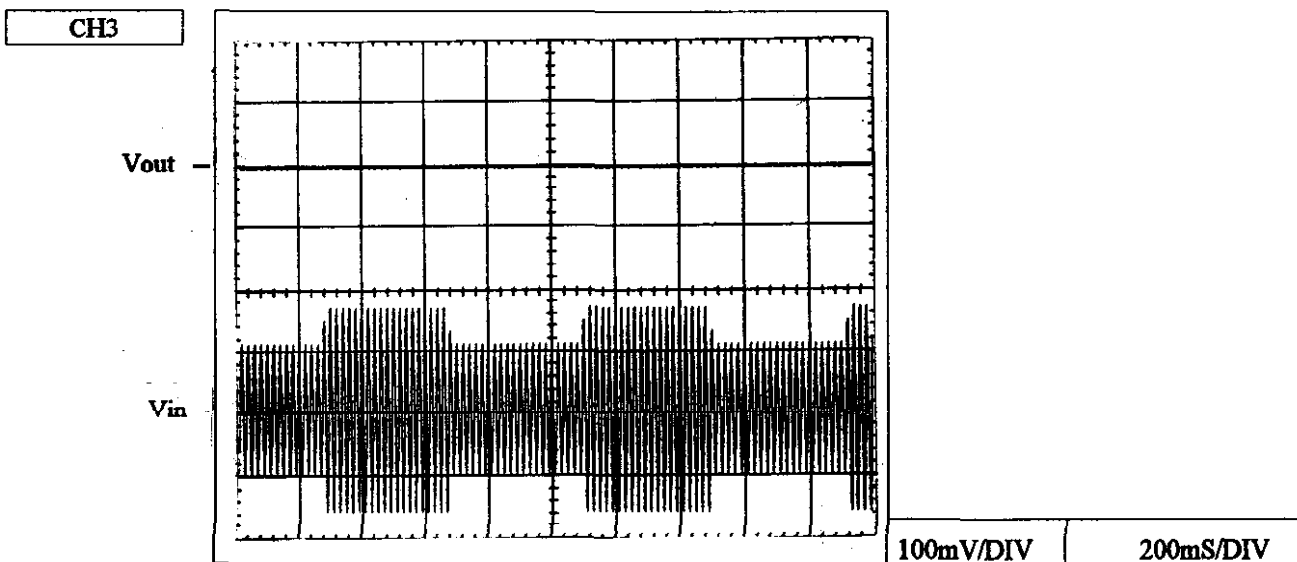
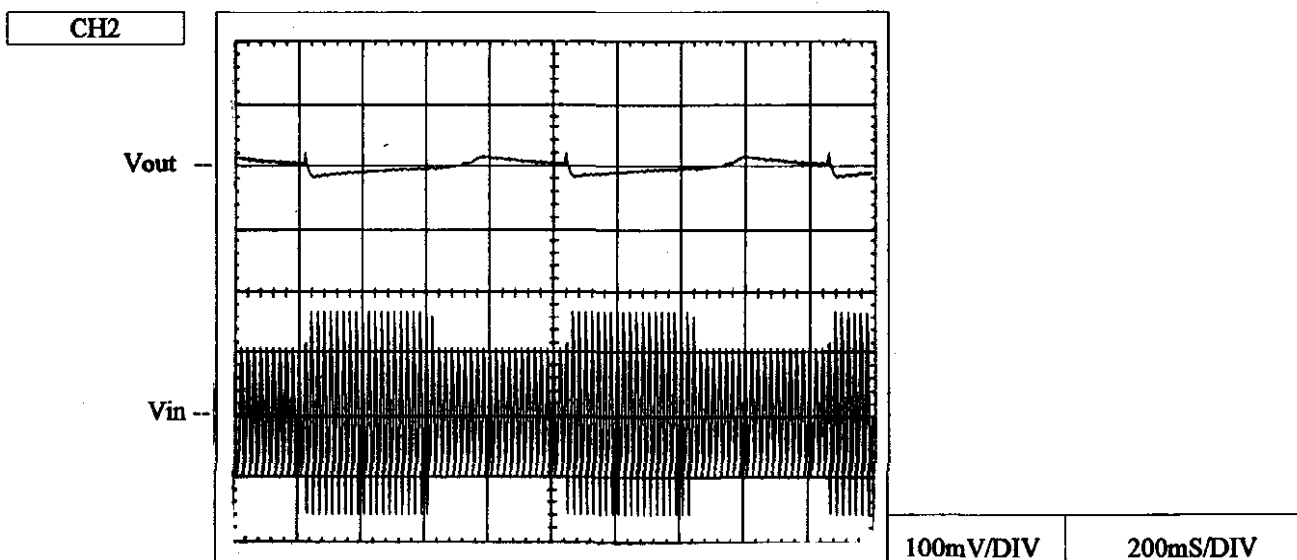
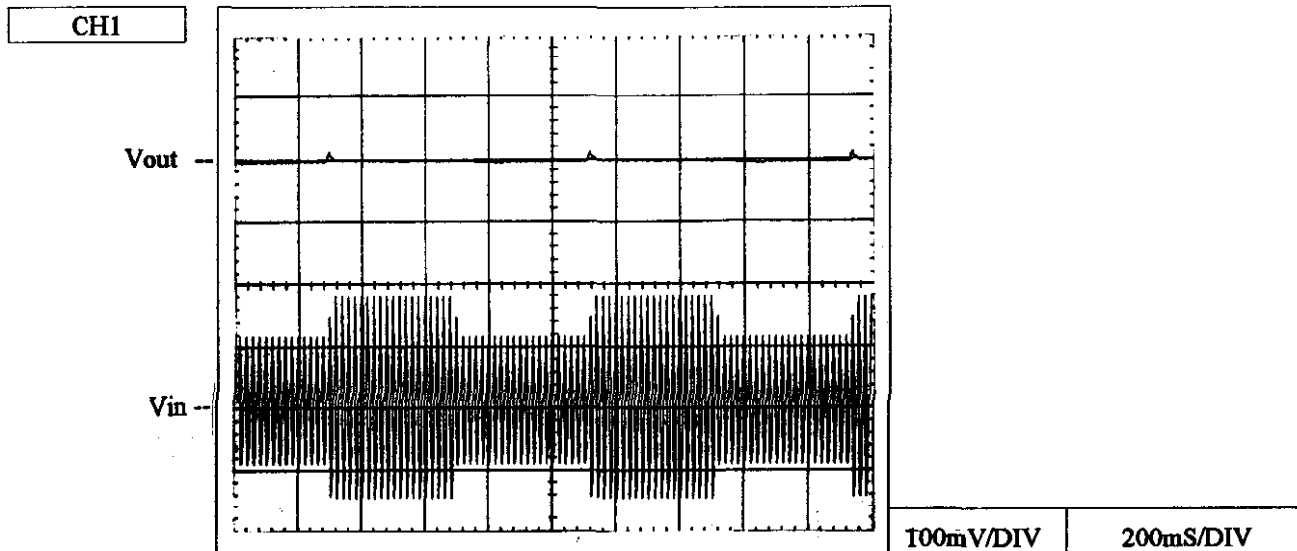
SWT30-522

Conditions

I<sub>out</sub> = 100%

T<sub>a</sub> = 25 °C

V<sub>in</sub> : 170VAC ← → 265VAC



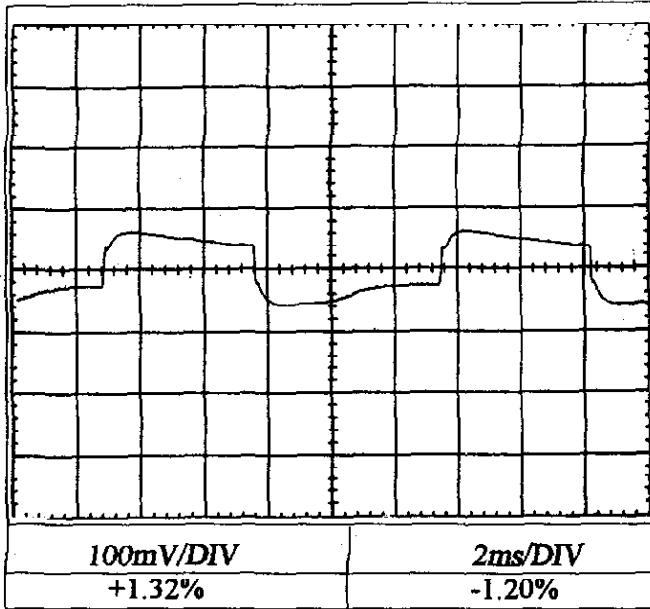
# DYNAMIC LOAD RESPONSE

SWT30-522

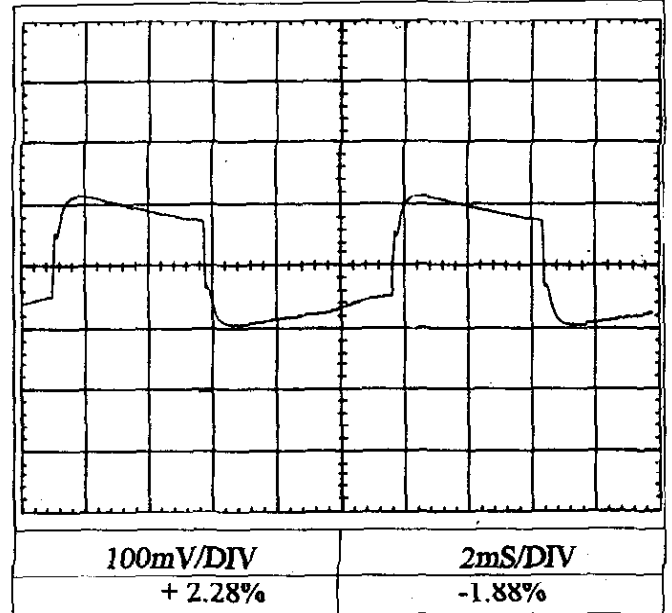
CH1

Conditions  $T_a = 25\text{ }^\circ\text{C}$   
 $V_{in} = 100\text{VAC}$   
 CH2,CH3:  $I_{out} = 100\%$

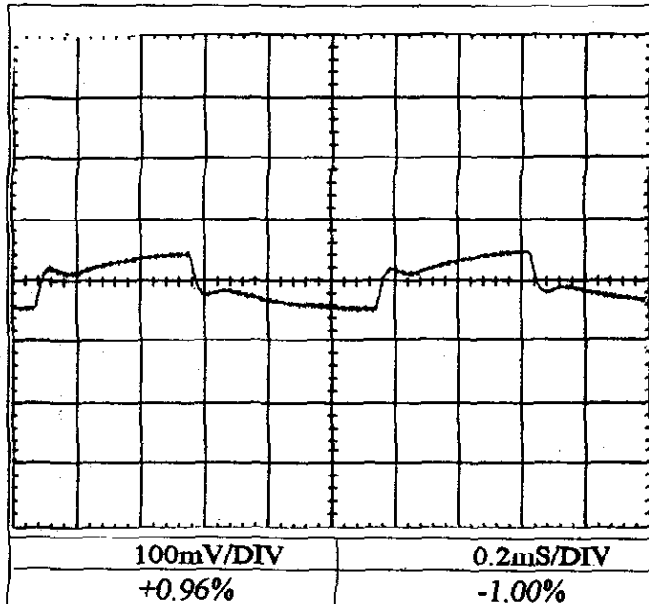
$I_{out} 50\%$  ← →  $100\%$   $f = 100\text{Hz}$



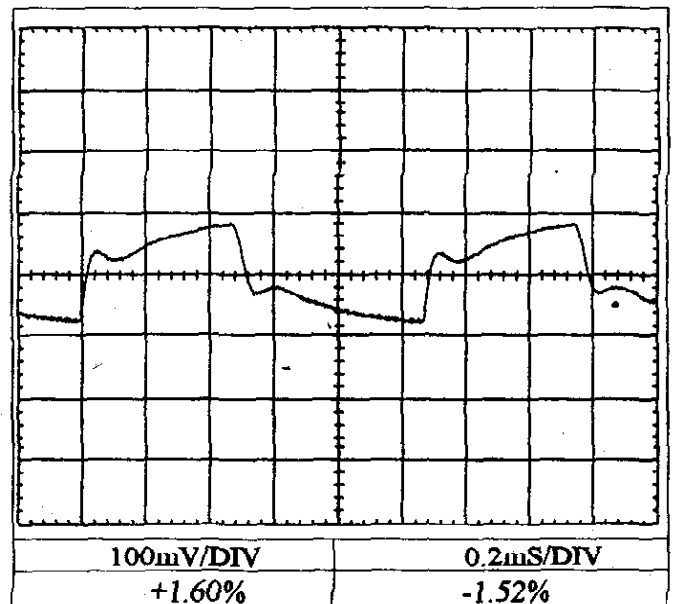
$I_{out} \text{Min}$  ← →  $100\%$   $f = 100\text{Hz}$



$I_{out} 50\%$  ← →  $100\%$   $f = 1\text{kHz}$



$I_{out} \text{Min}$  ← →  $100\%$   $f = 1\text{kHz}$



SHANGHAI NEMIC-LAMBDA

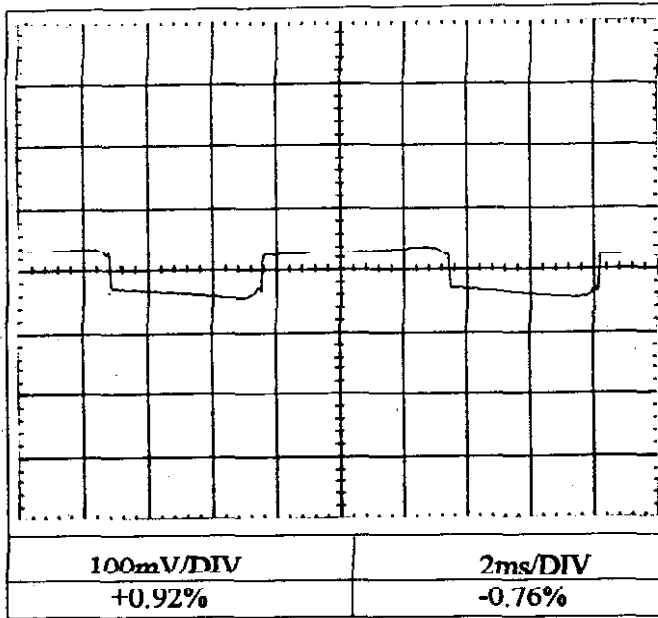
# DYNAMIC LOAD RESPONSE

SWT30-522

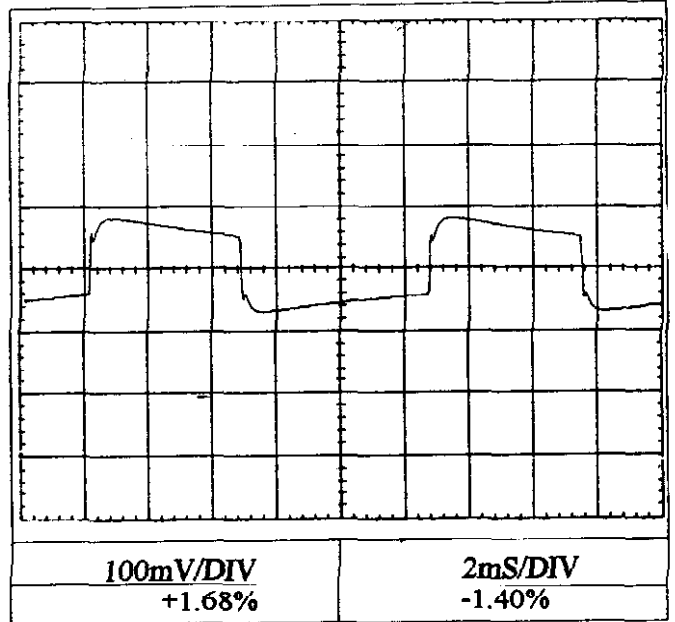
CH1

Conditions  $T_a = 25\text{ }^\circ\text{C}$   
 $V_{in} = 200\text{VAC}$   
 CH2,CH3:  $I_{out} = 100\%$

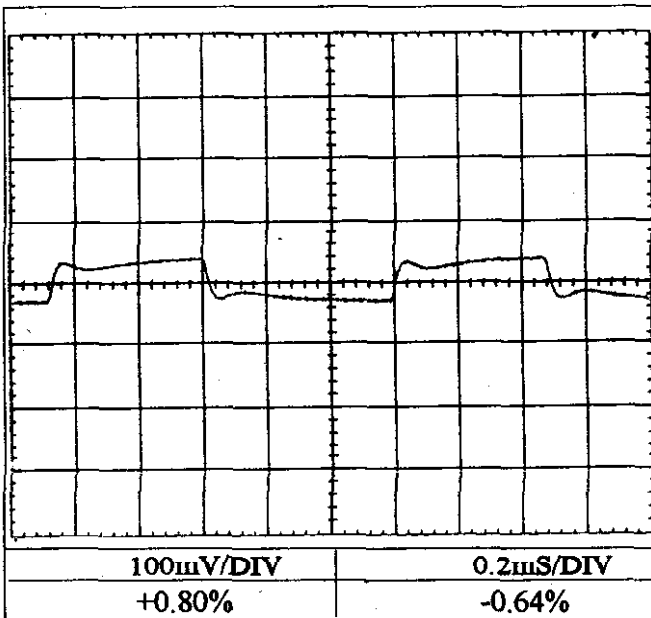
$I_{out} 50\%$  ← →  $100\% f = 100\text{Hz}$



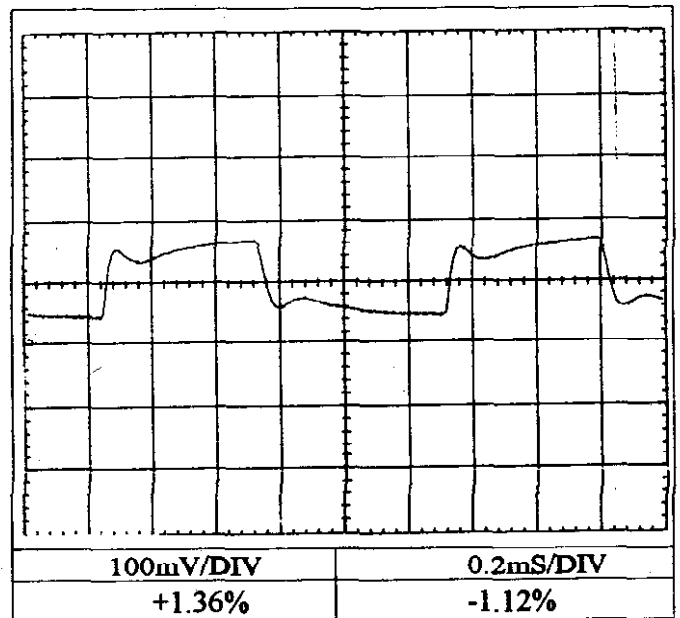
$I_{out} \text{Min}$  ← →  $100\% f=100\text{Hz}$



$I_{out} 50\%$  ← →  $100\% f = 1\text{kHz}$



$I_{out} \text{Min}$  ← →  $100\% f=1\text{kHz}$



SHANGHAI NEMIC-LAMBDA

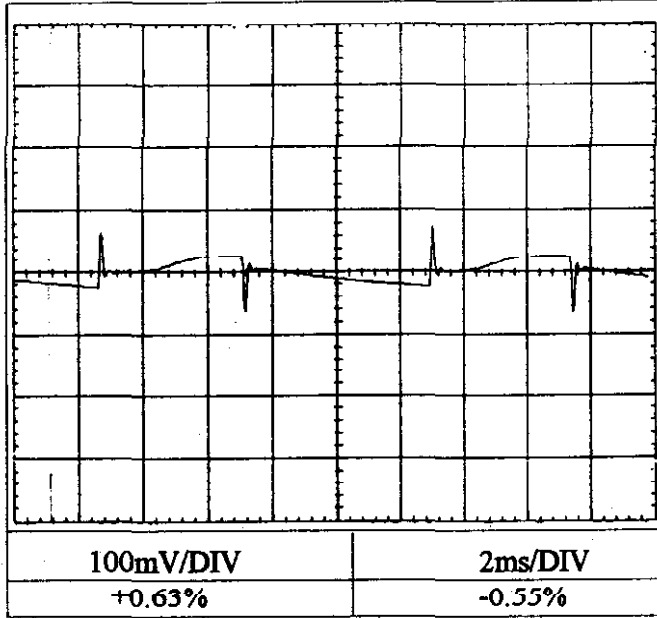
# DYNAMIC LOAD RESPONSE

SWT30-522

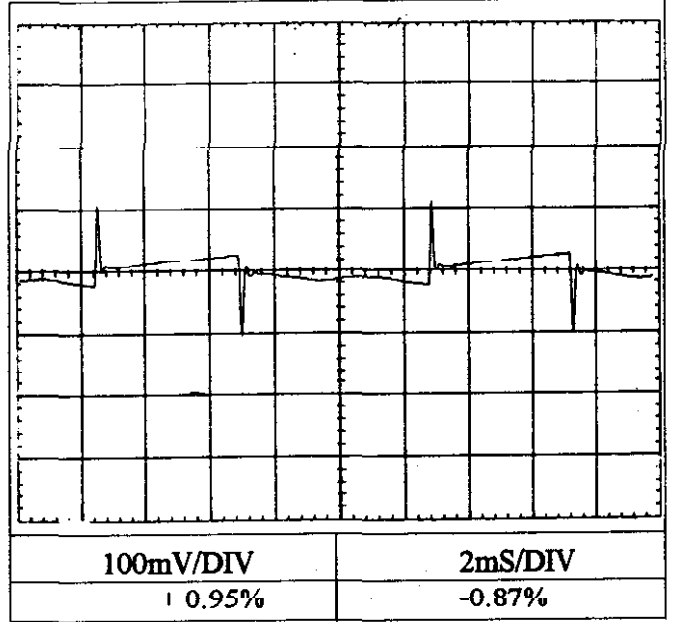
CH2

Conditions  $T_a = 25\text{ }^\circ\text{C}$   
 $V_{in} = 100\text{VAC}$   
 CH1,CH3:  $I_{out} = 100\%$

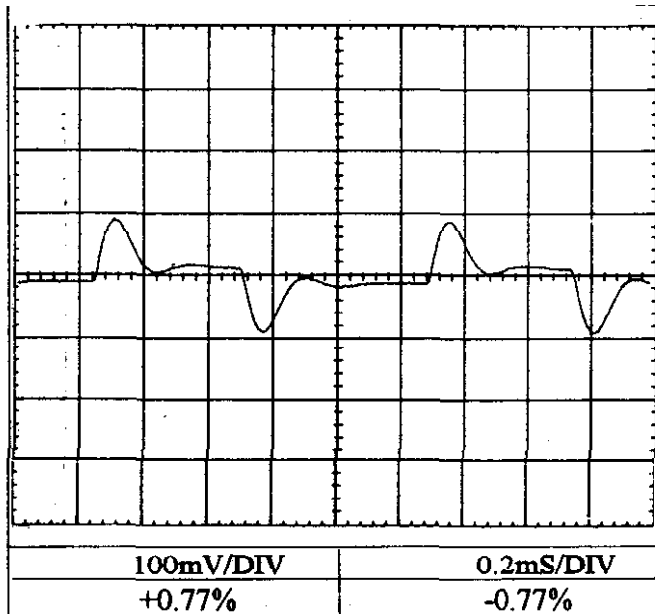
$I_{out} 50\%$  ← →  $100\% f = 100\text{Hz}$



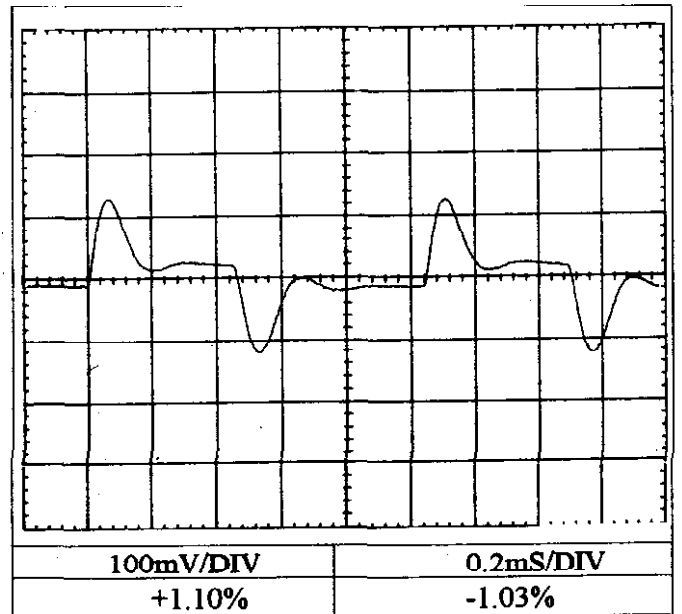
$I_{out} \text{Min}$  ← →  $100\% f = 100\text{Hz}$



$I_{out} 50\%$  ← →  $100\% f = 1\text{kHz}$



$I_{out} \text{Min}$  ← →  $100\% f = 1\text{kHz}$



SHANGHAI NEMIC-LAMBDA



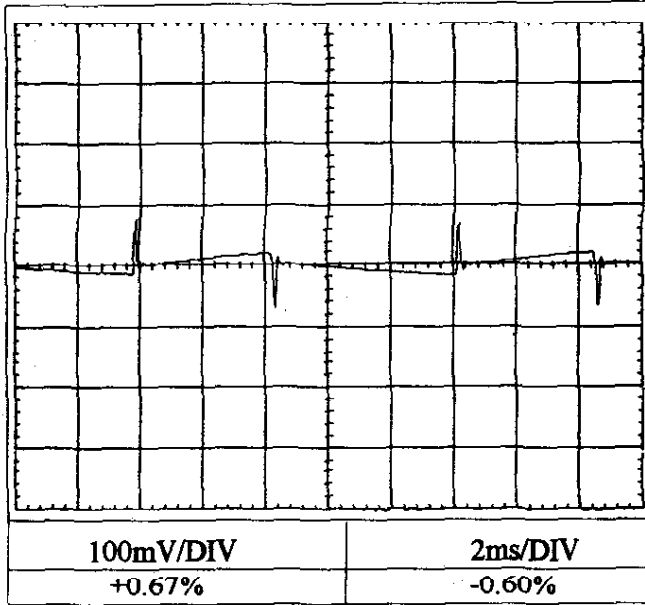
# DYNAMIC LOAD RESPONSE

SWT30-522

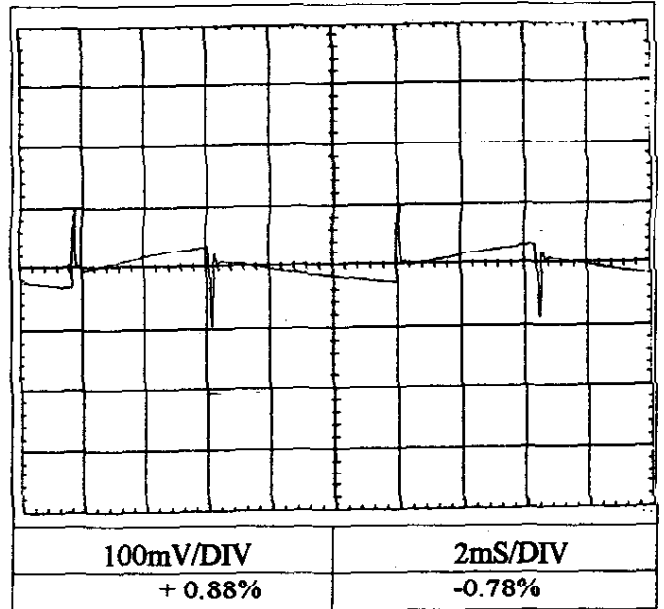
CH2

Conditions  $T_a = 25\text{ }^\circ\text{C}$   
 $V_{in} = 200\text{VAC}$   
CH1,CH3:  $I_{out} = 100\%$

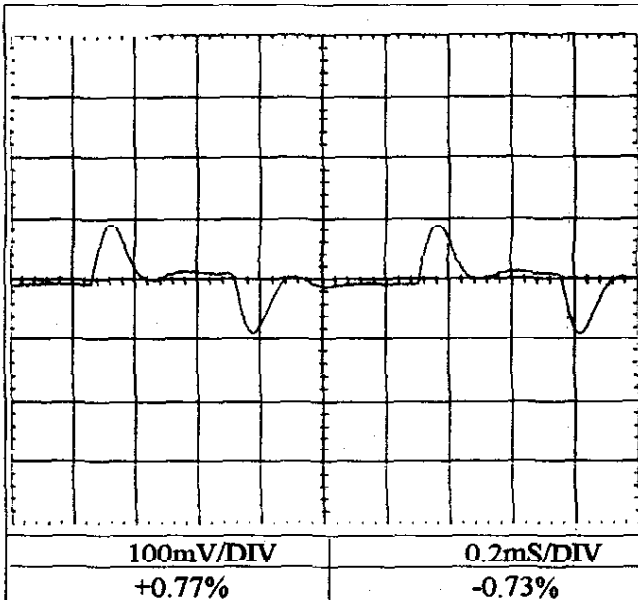
$I_{out} 50\%$  ← →  $100\% f = 100\text{Hz}$



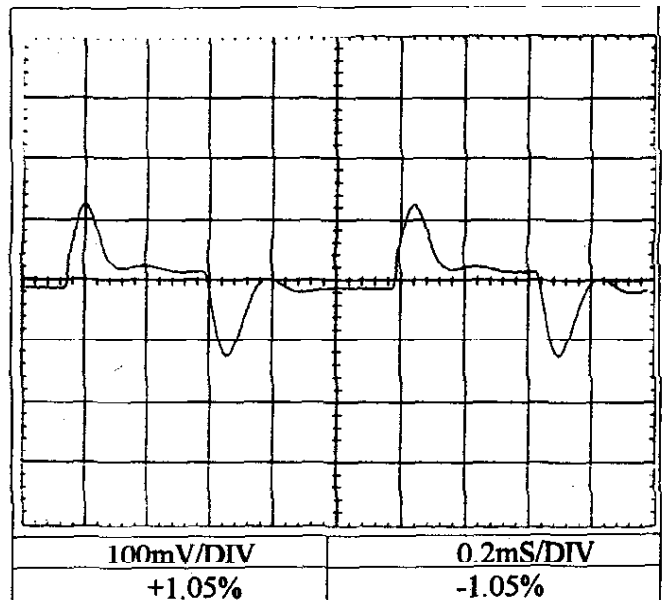
$I_{out} \text{Min}$  ← →  $100\% f = 100\text{Hz}$



$I_{out} 50\%$  ← →  $100\% f = 1\text{kHz}$



$I_{out} \text{Min}$  ← →  $100\% f = 1\text{kHz}$



SHANGHAI NEMIC-LAMBDA

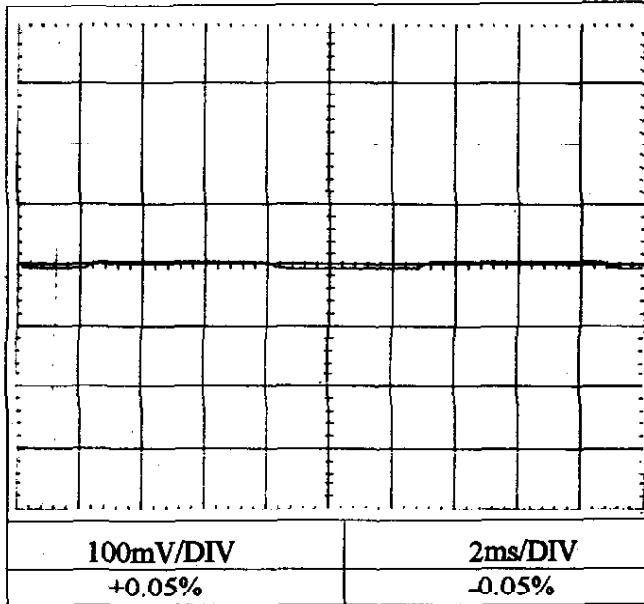
# DYNAMIC LOAD RESPONSE

SWT30-522

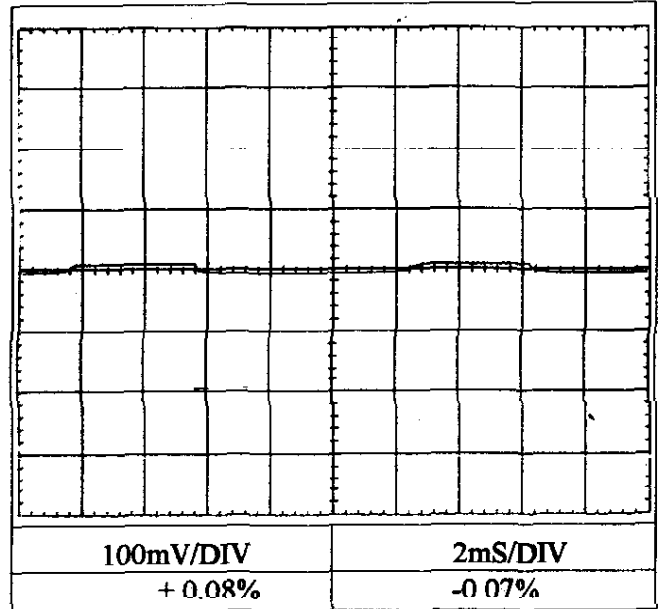
CH3

Conditions  $T_a = 25\text{ }^\circ\text{C}$   
 $V_{in} = 100\text{VAC}$   
 CH1,CH2:  $I_{out} = 100\%$

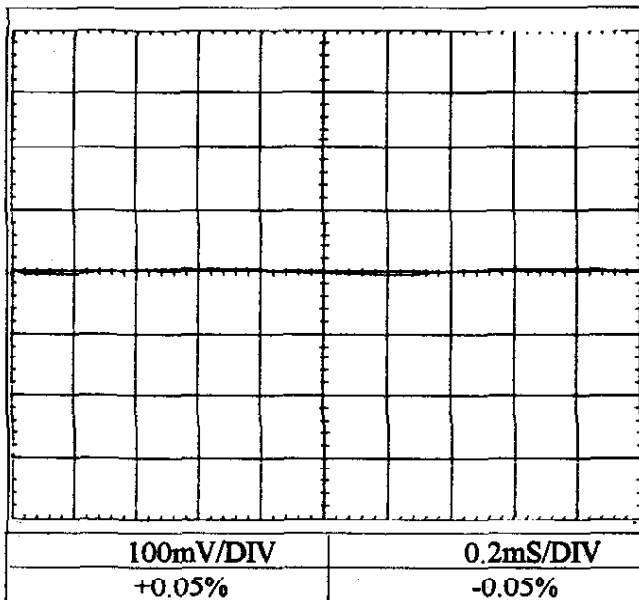
$I_{out} 50\%$  ← →  $100\% f = 100\text{Hz}$



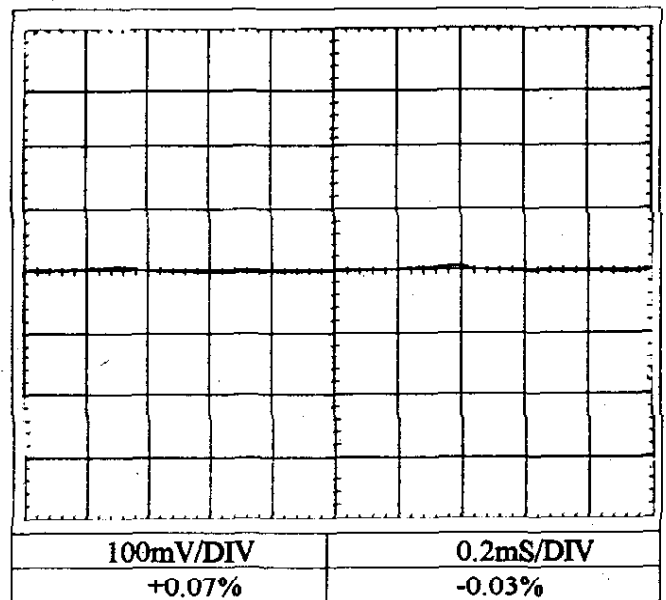
$I_{out} \text{Min}$  ← →  $100\% f=100\text{Hz}$



$I_{out} 50\%$  ← →  $100\% f = 1\text{kHz}$



$I_{out} \text{Min}$  ← →  $100\% f=1\text{kHz}$



SHANGHAI NEMIC-LAMBDA

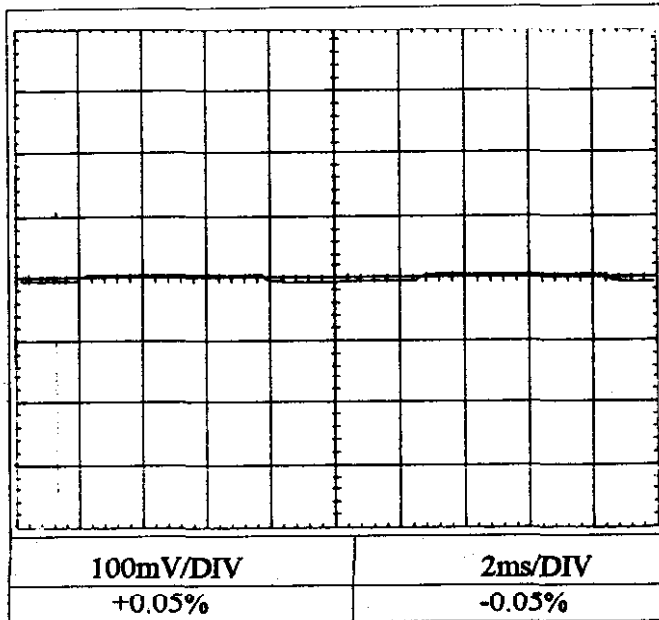
# DYNAMIC LOAD RESPONSE

SWT30-522

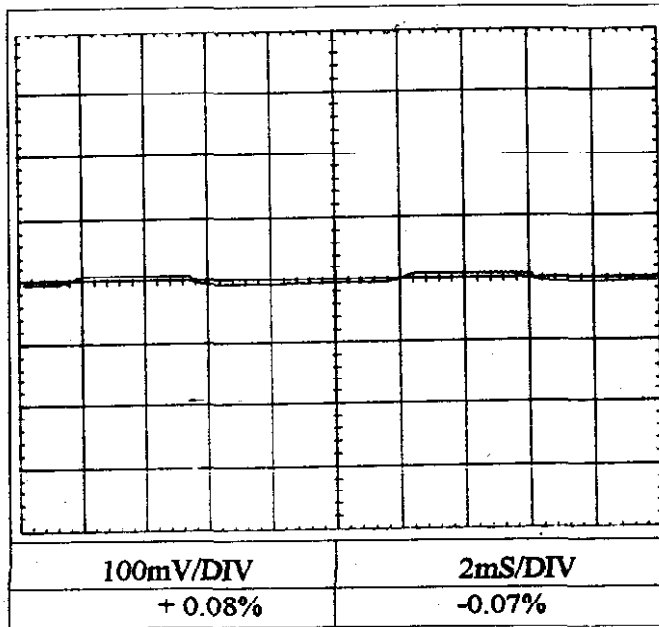
CH3

Conditions  $T_a = 25\text{ }^\circ\text{C}$   
 $V_{in} = 200\text{VAC}$   
 CH1,CH2:  $I_{out} = 100\%$

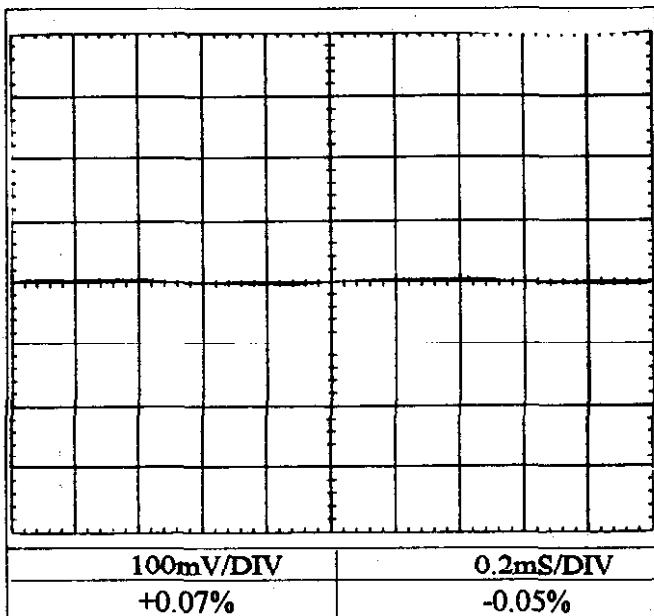
$I_{out} 50\%$   $\longleftrightarrow$   $100\% f = 100\text{Hz}$



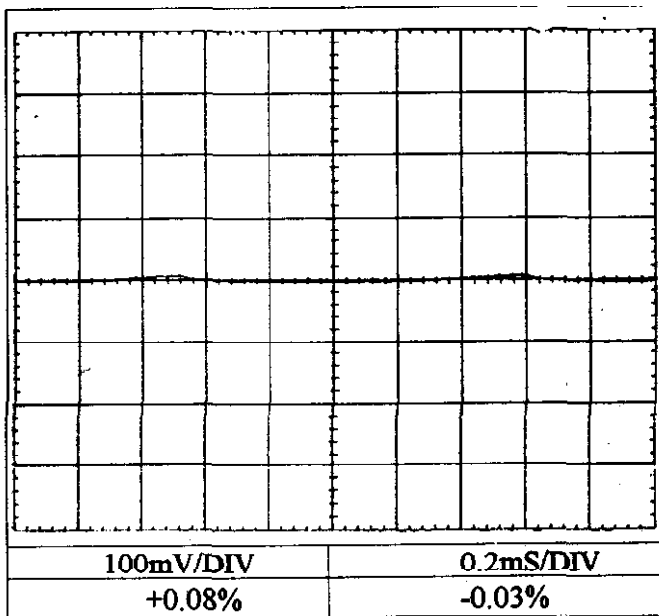
$I_{out} \text{Min}$   $\longleftrightarrow$   $100\% f = 100\text{Hz}$



$I_{out} 50\%$   $\longleftrightarrow$   $100\% f = 1\text{kHz}$



$I_{out} \text{Min}$   $\longleftrightarrow$   $100\% f = 1\text{kHz}$

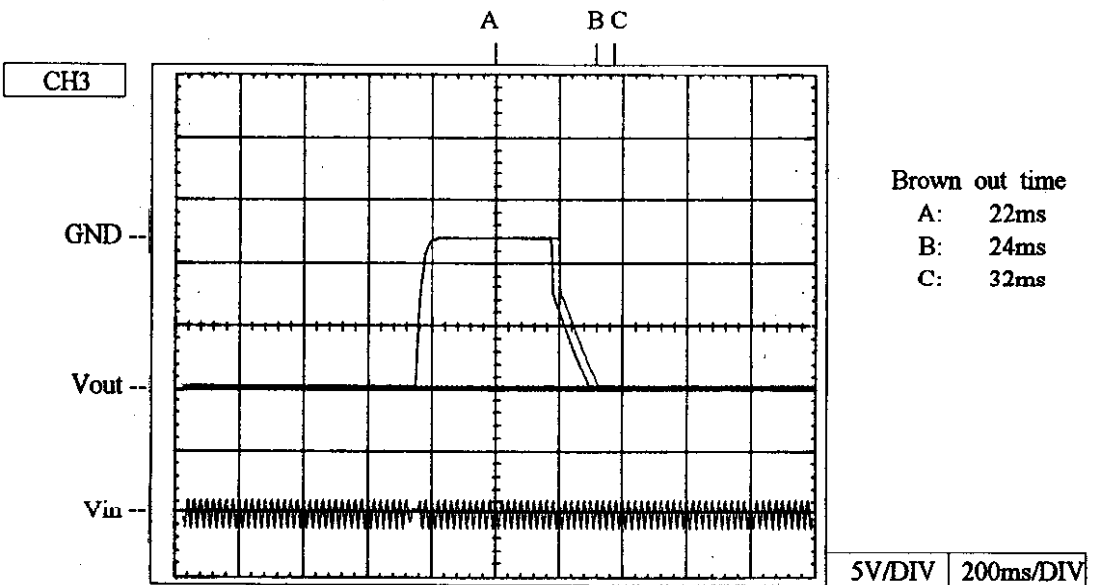
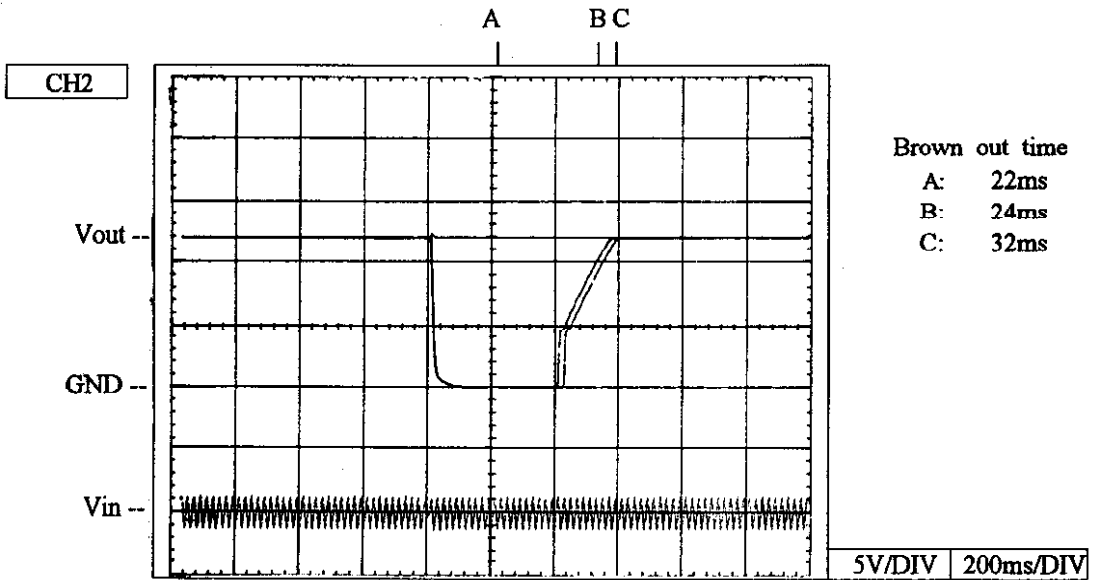
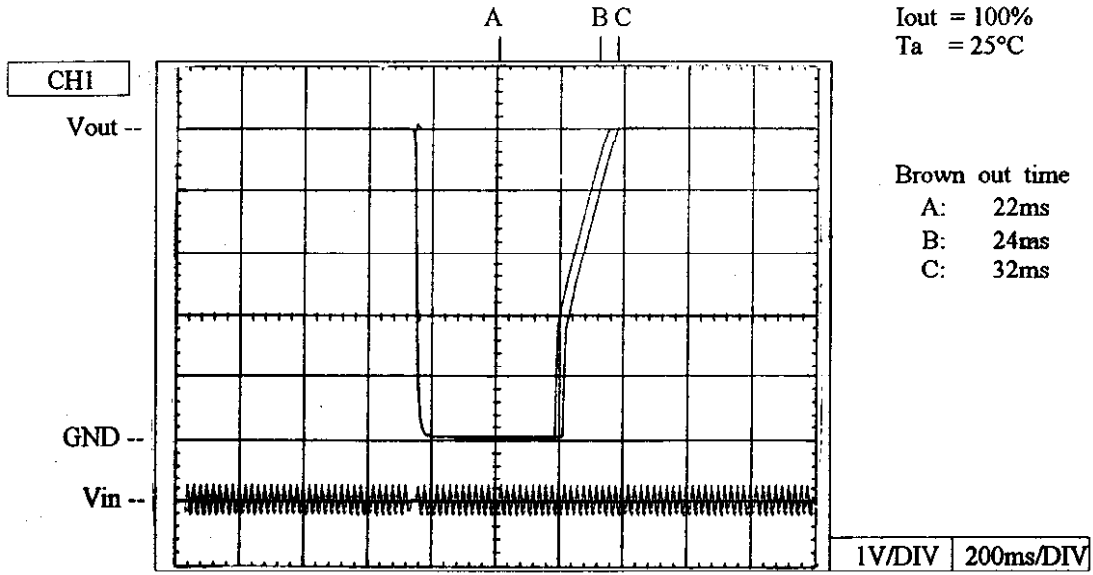


SHANGHAI NEMIC-LAMBDA

# RESPONSE TO BROWN OUT

Conditions

V<sub>in</sub> = 100VAC  
 I<sub>out</sub> = 100%  
 T<sub>a</sub> = 25°C

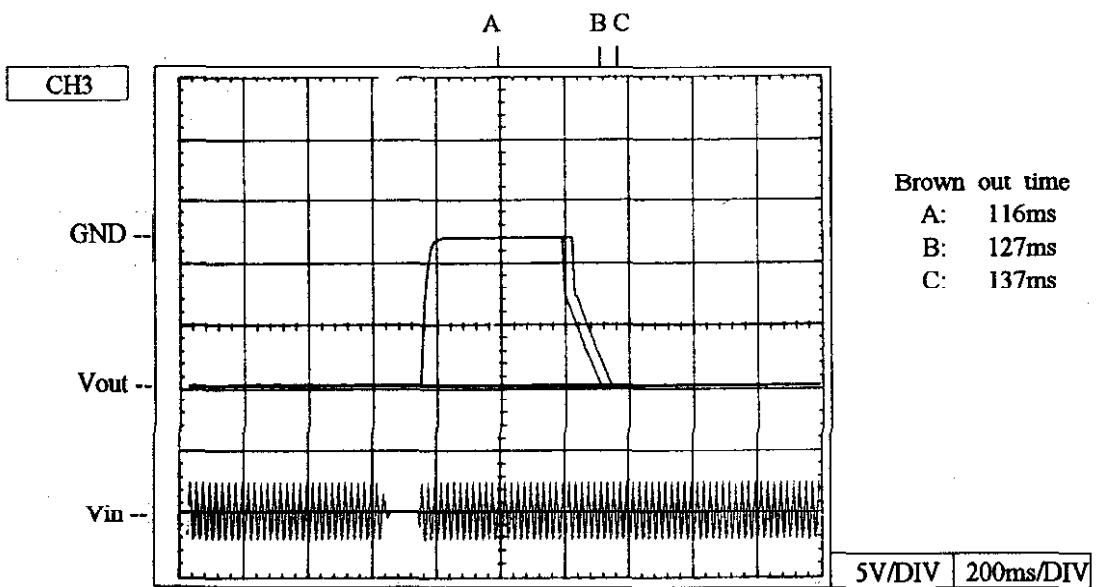
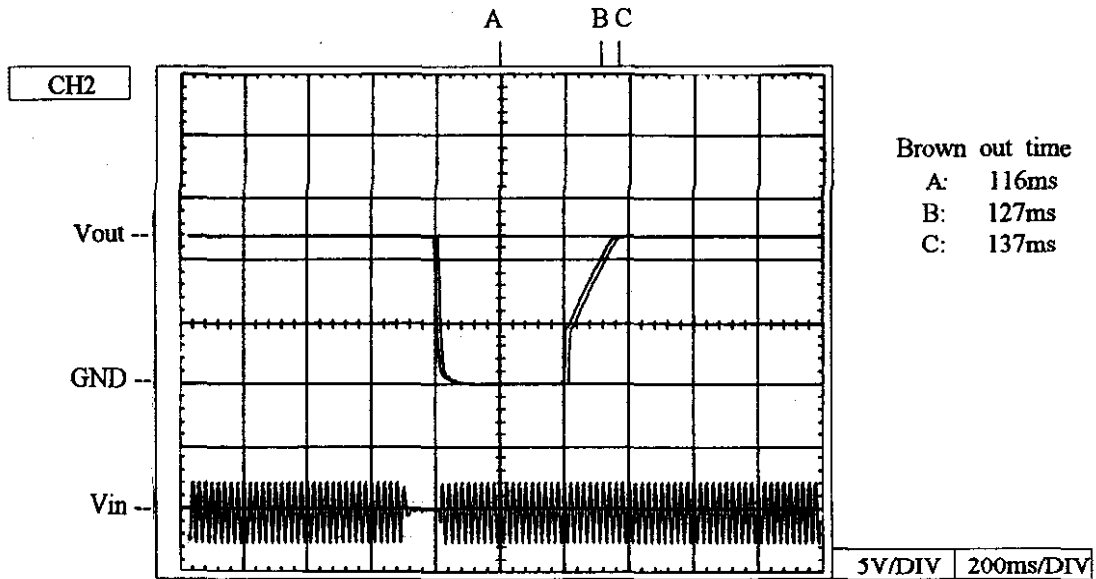
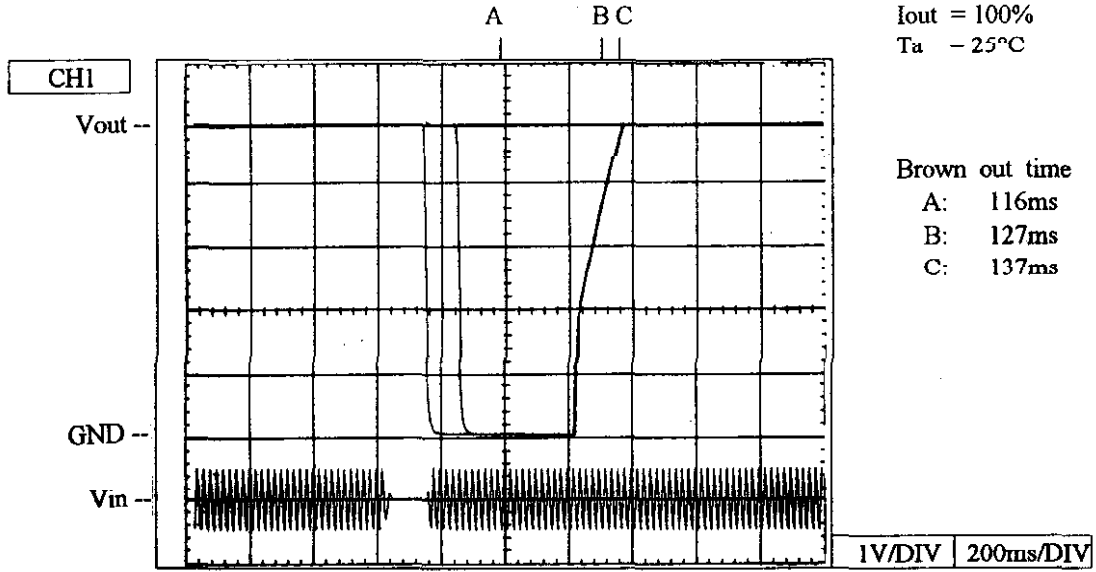


SHANGHAI NEMIC - LAMBDA

**RESPONSE TO BROWN OUT**

Conditions

$V_{in} = 200VAC$   
 $I_{out} = 100\%$   
 $T_a = 25^{\circ}C$

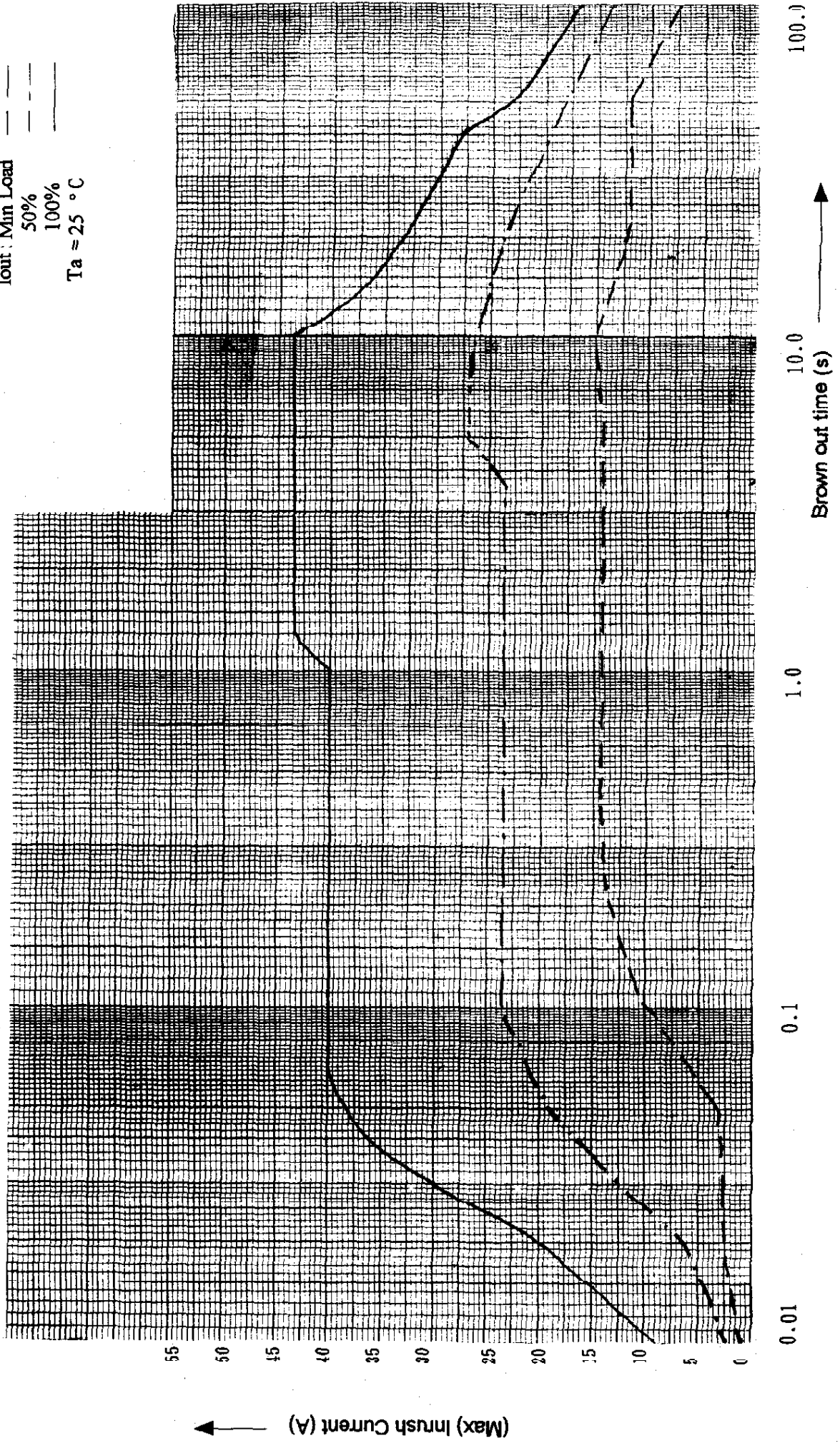


SHANGHAI NEMIC - LAMBDA

# INRUSH v.s BROWN OUT TIME

SWT30 - \*

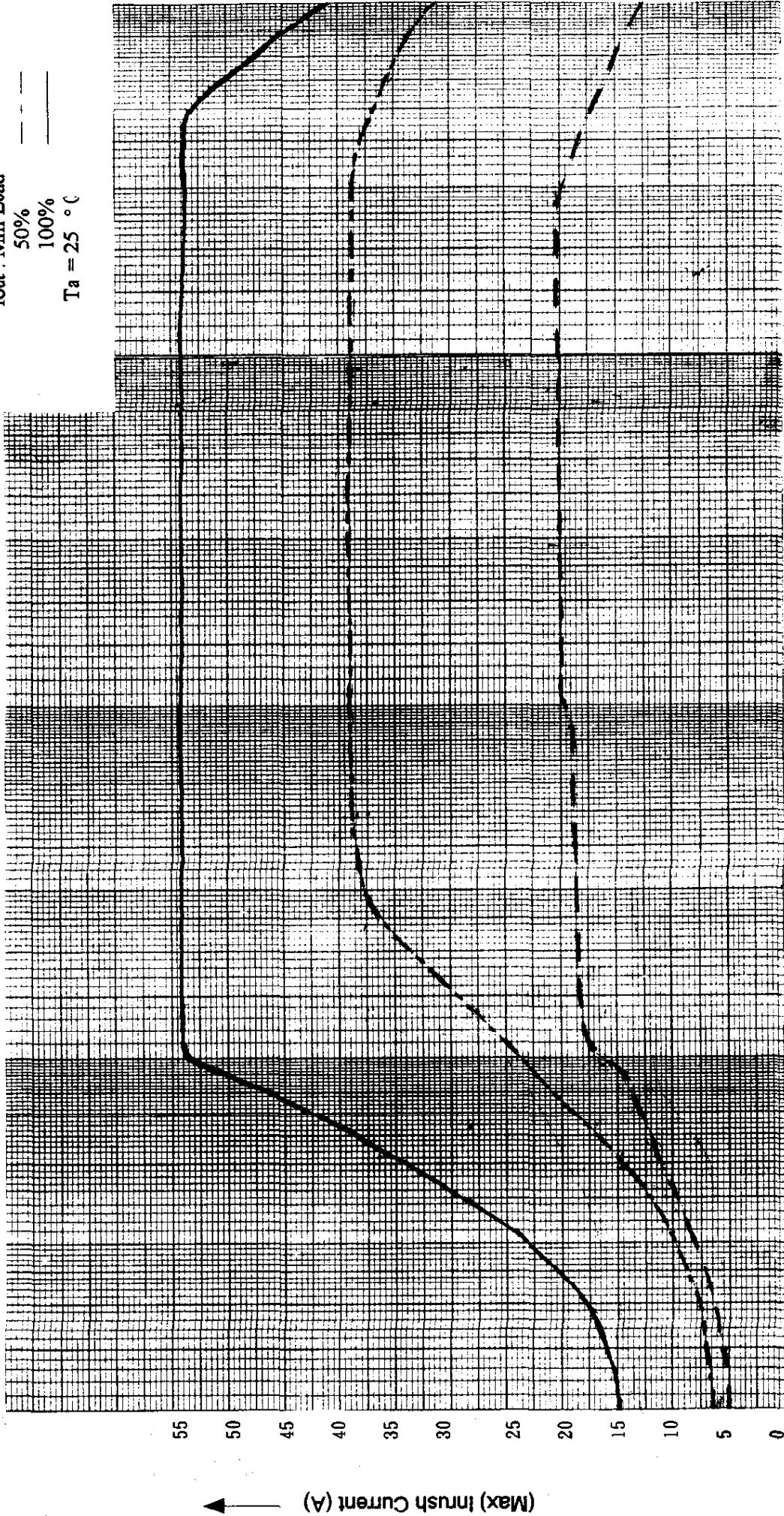
Conditions  
 Vin = 100VAC  
 Iout : Min Load  
       50%  
       100%  
 Ta = 25 °C



# INRUSH v.s BROWN OUT TIME

SWT30 - \*

Conditions  
 $V_{in} = 220VAC$   
 $I_{out} : Min Load$   
 50%  
 100%  
 $T_a = 25 \text{ } ^\circ C$



# INRUSH CURRENT WAVEFORM

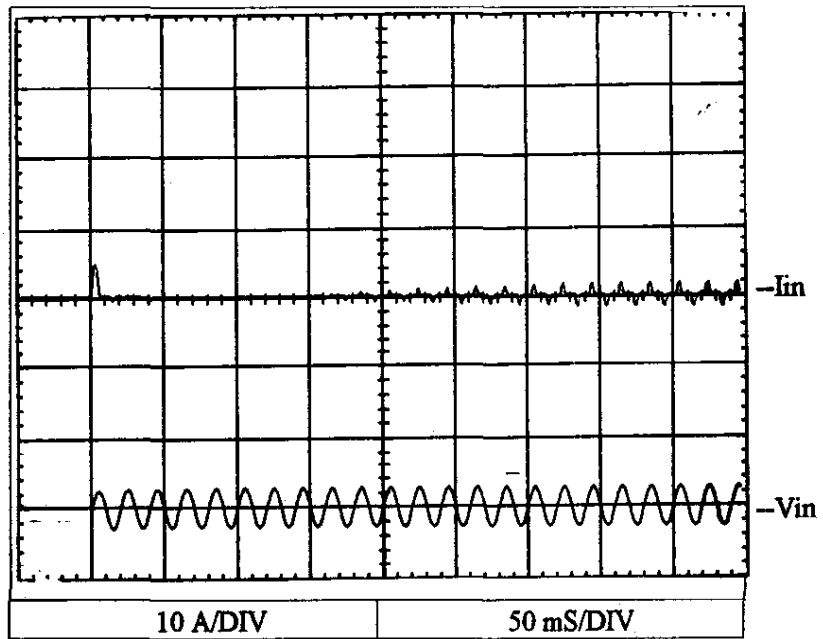
SWT30-52

Conditions

$T_a = 25\text{ }^\circ\text{C}$   
 $V_{in} = 100\text{VAC}$   
 $I_{out} = 100\%$

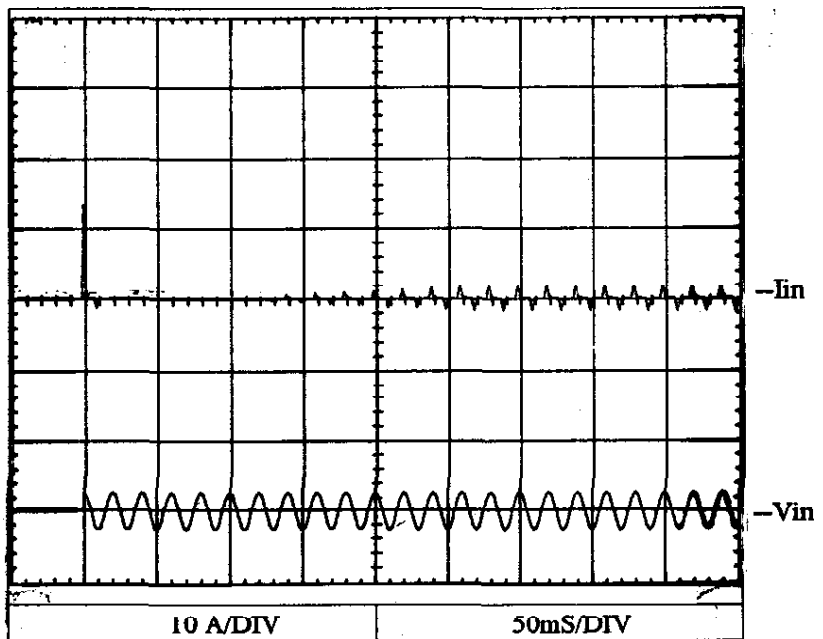
Switch on phase angle  
of input AC voltage

$$\phi = 0^\circ$$



Switch on phase angle  
of input AC voltage

$$\phi = 90^\circ$$



SHANGHAI NEMIC-LAMBDA



# INRUSH CURRENT WAVEFORM

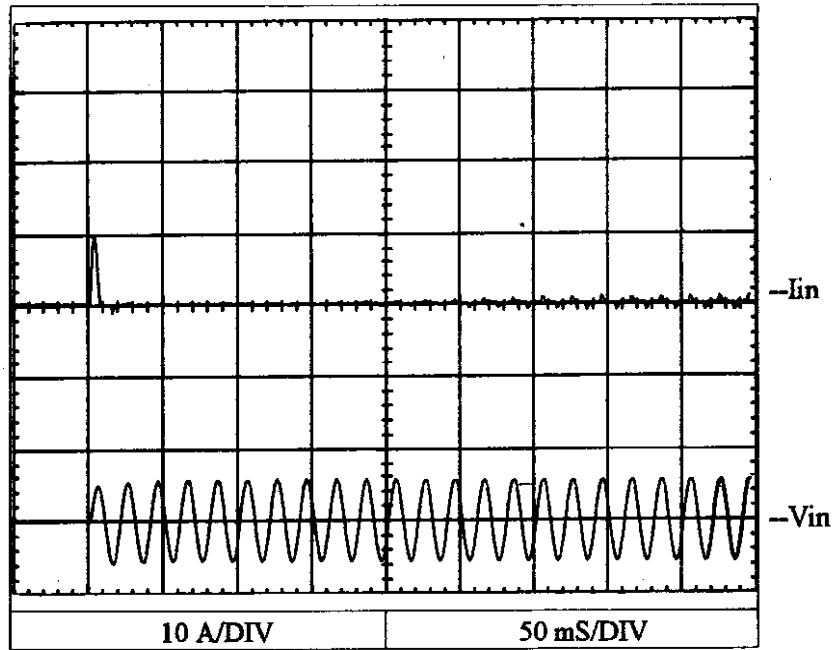
SWT30-\*

Conditions

Ta = 25 °C  
Vin = 220VAC  
Iout = 100%

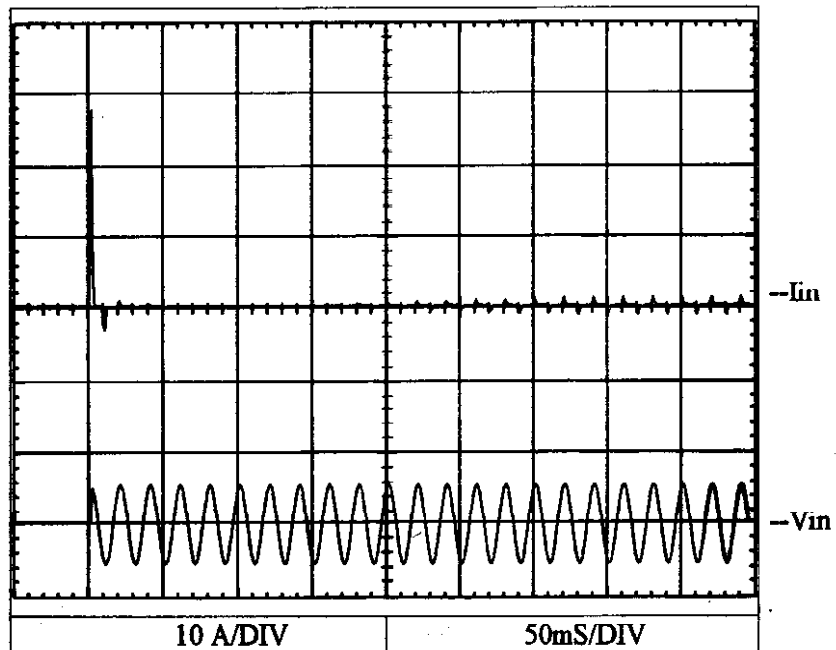
Switch on phase angle  
of input AC voltage

$$\phi = 0^\circ$$



Switch on phase angle  
of input AC voltage

$$\phi = 90^\circ$$



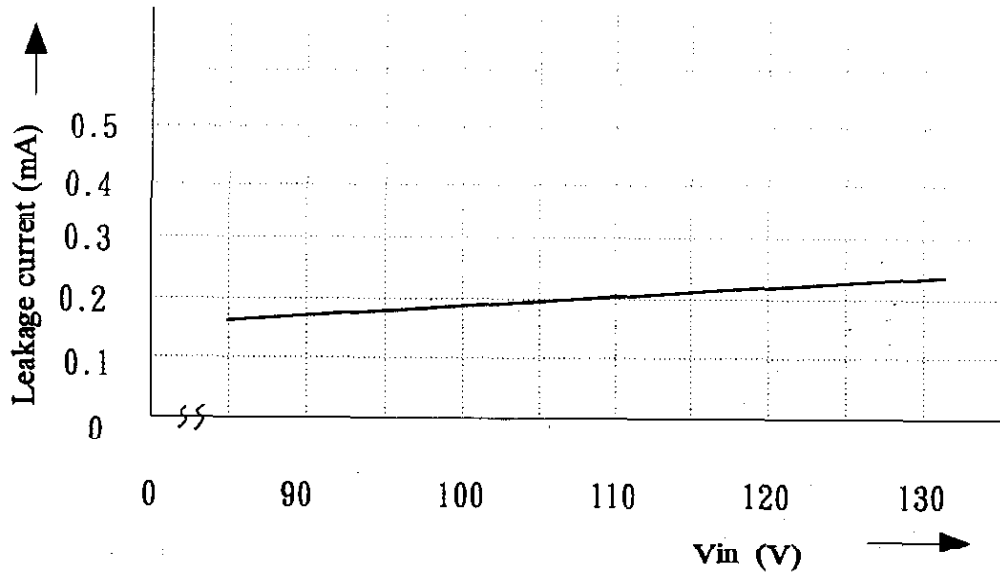
SHANGHAI NEMIC-LAMBDA

# LEAKAGE CURRENT

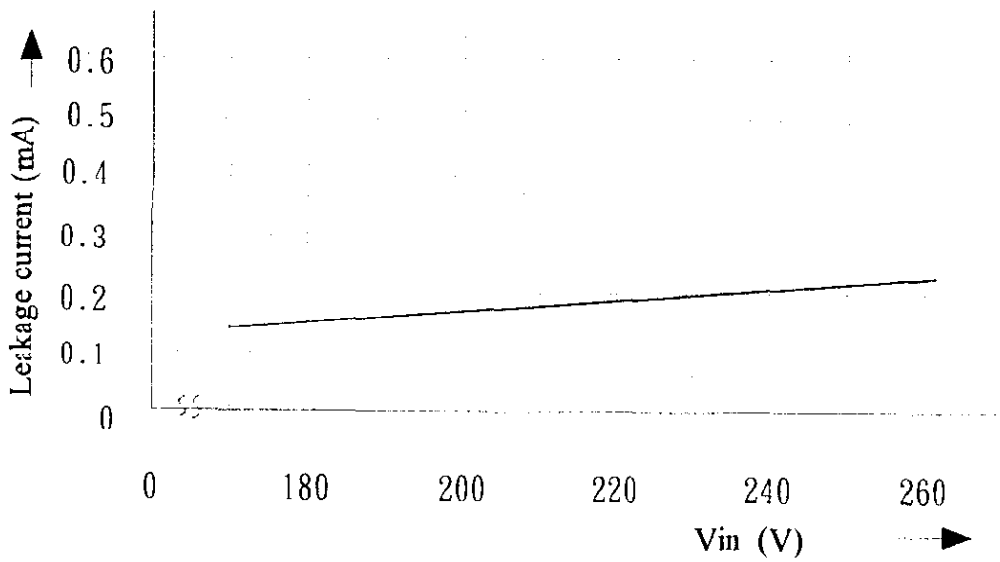
SWT30 - \*

Conditions  $T_a = 25\text{ }^\circ\text{C}$   
 $I_{out} : \text{MIN LOAD}$  — — —  
100% —————  
: 50Hz

AC100V



AC200V

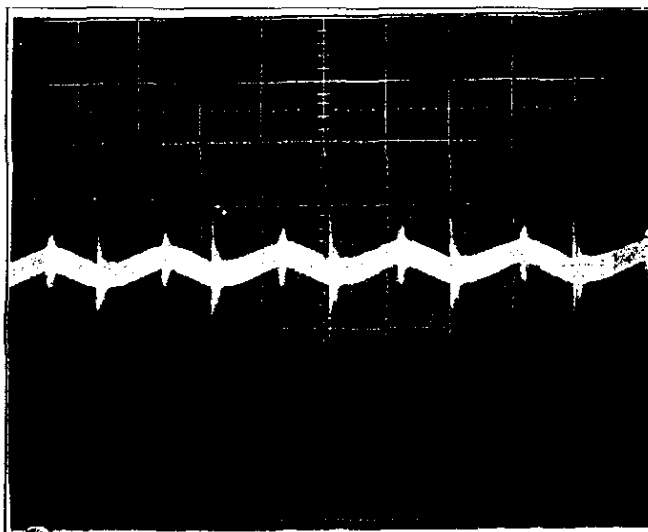


# OUTPUT-RIPPLE, NOISE

**SWT30 - 522**  
Conditions  $V_{in} = 100VAC$   
 $I_{out} = 100\%$   
 $T_a = 25^\circ C$

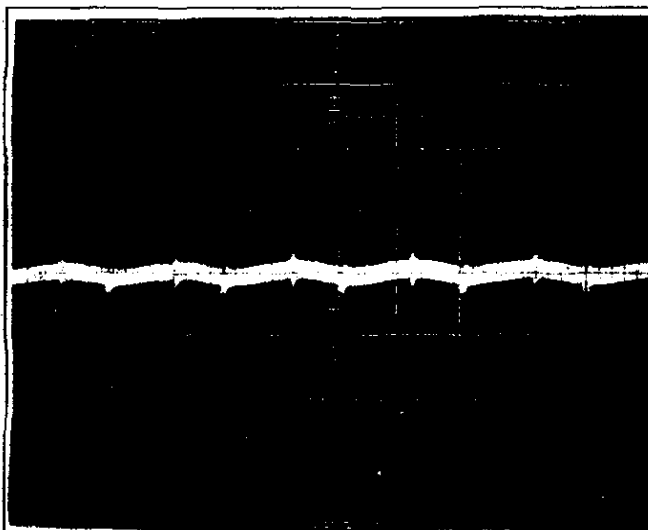
NORMAL MODE

CH1



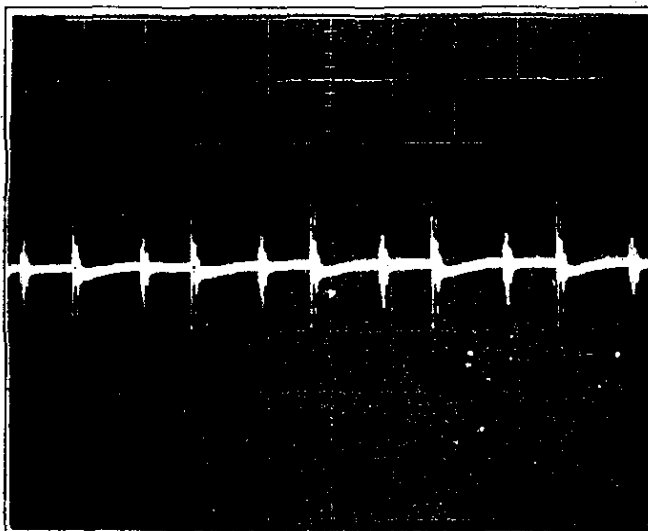
20mV/DIV 5us/DIV

CH2



20mV/DIV 5us/DIV

CH3



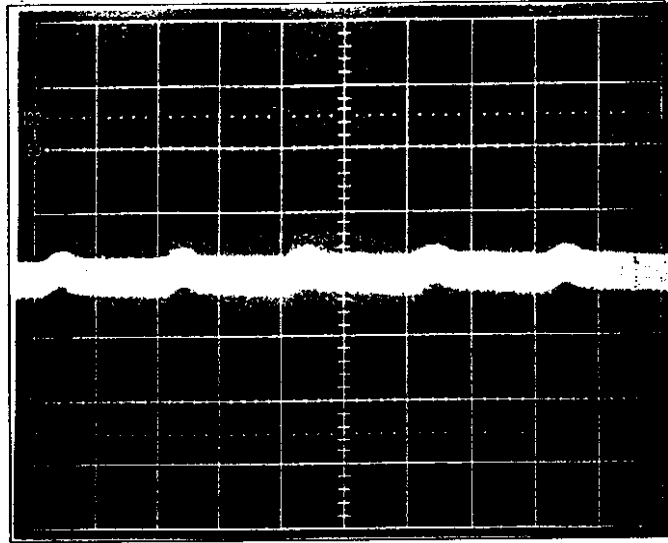
20mV/DIV 5us/DIV

# OUTPUT-RIPPLE, NOISE

**SWT30 - 522**  
Conditions  $V_{in} = 100VAC$   
 $I_{out} = 100\%$   
 $T_a = 25^\circ C$

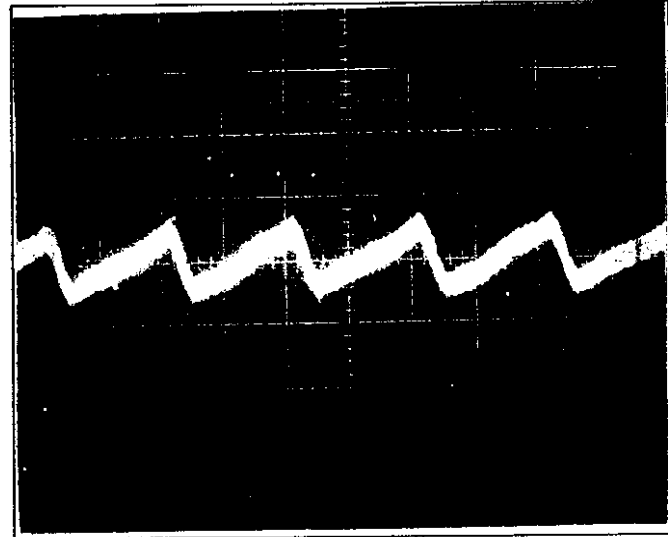
NORMAL MODE

CH1



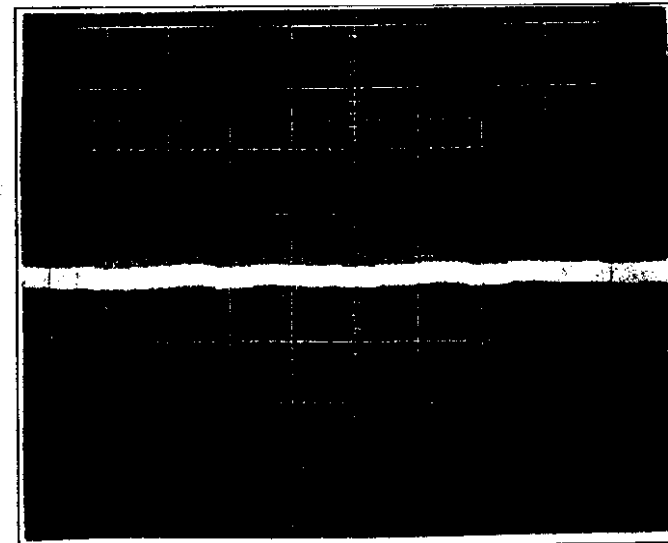
20mV/DIV 5ms/DIV

CH2



20mV/DIV 5ms/DIV

CH3



20mV/DIV 5ms/DIV

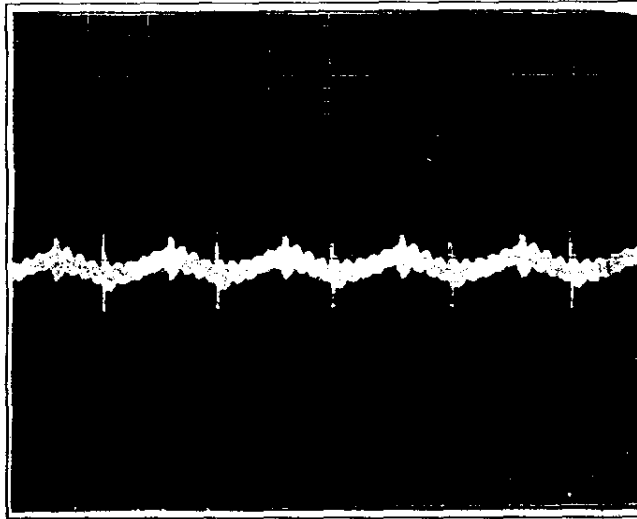
# OUTPUT-RIPPLE, NOISE

SWT30 - 522

Conditions  $V_{in} = 100VAC$   
 $I_{out} = 100\%$   
 $T_a = 25\text{ }^\circ C$

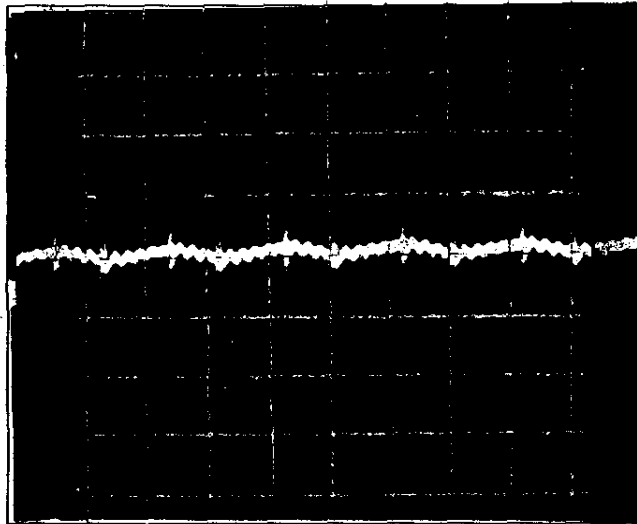
COMMON + NORMAL MODE

CH1



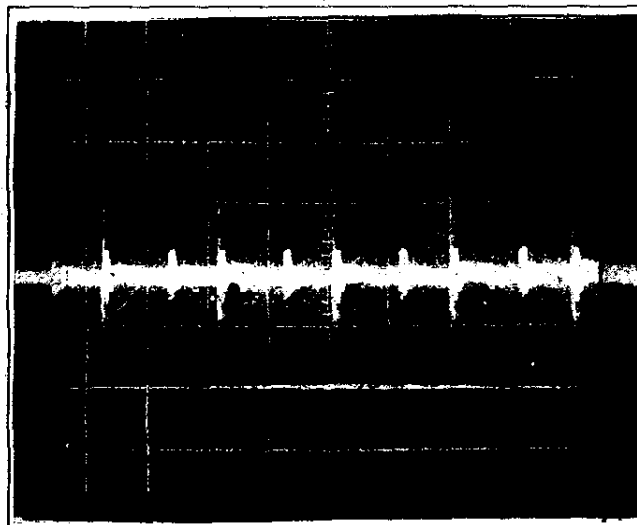
20mV/DIV 5us/DIV

CH2



20mV/DIV 5us/DIV

CH3



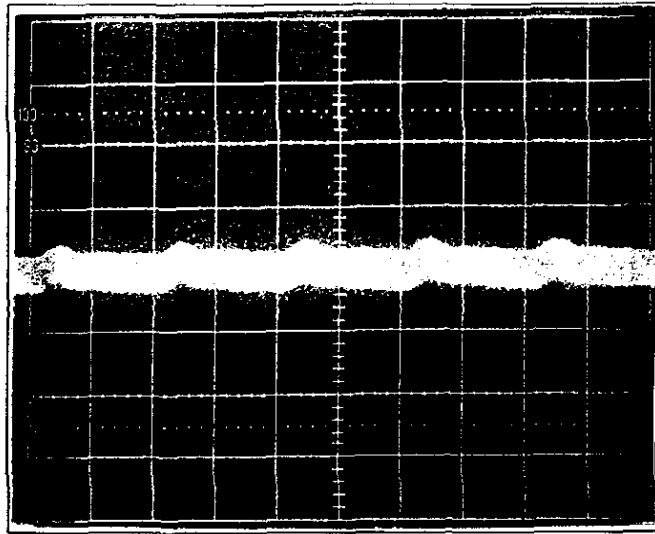
20mV/DIV 5us/DIV

# OUTPUT-RIPPLE, NOISE

**SWT30 - 522**  
Conditions  $V_{in} = 100VAC$   
 $I_{out} = 100\%$   
 $T_a = 25^\circ C$

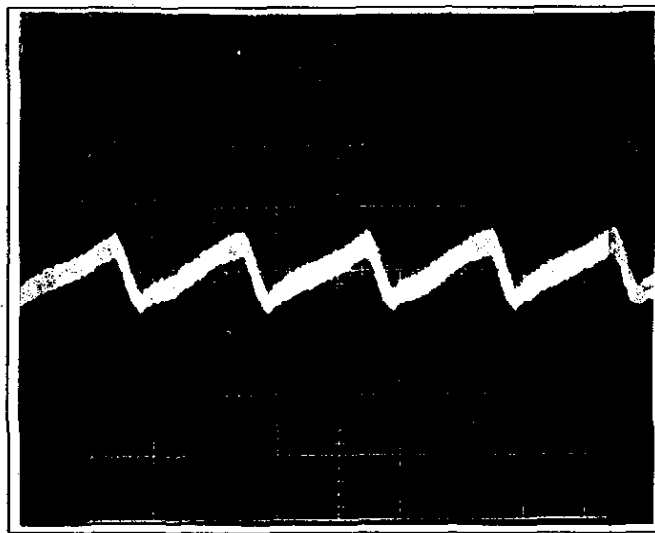
COMMON + NORMAL MODE

CH1



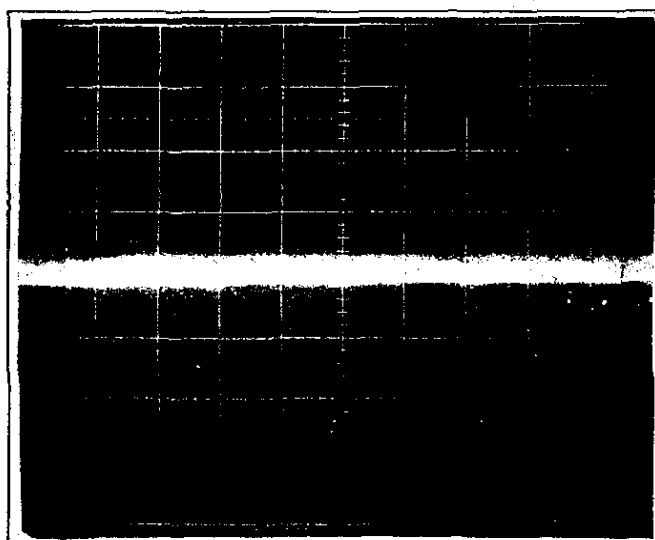
20mV/DIV 5ms/DIV

CH2



20mV/DIV 5ms/DIV

CH3



20mV/DIV 5ms/DIV