Z^+800 Series

EVALUATION

DATA

DWG No.: IA702-53-01		
APPD	CHK	DWG
20/3/13	19/03/13	D.MIRON 18-Mar-2013

TDK-Lambda

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TERMINOLOGY USED

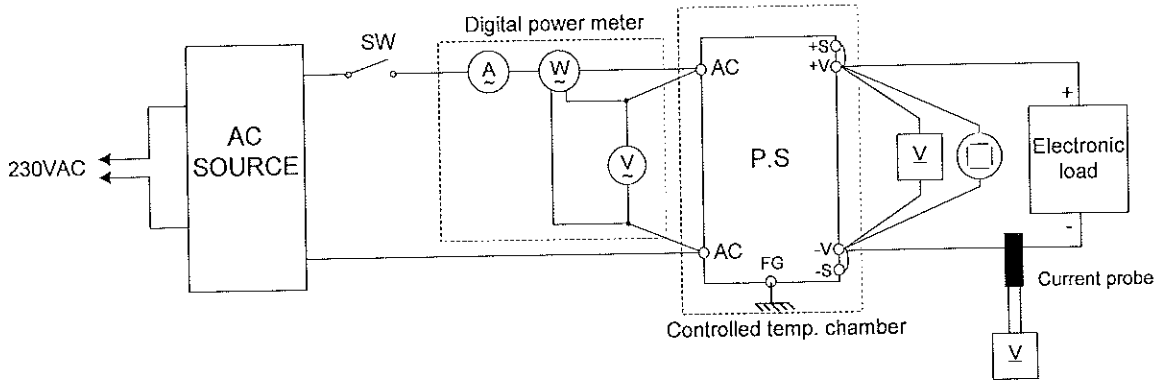
Definition

Vin	Input voltage
Vout	Output voltage
Iin	Input current
Iout	Output current
Ta	Ambient temperature
f	Frequency
C.V	Constant voltage mode
C.C	Constant current mode

1. EVALUATION METHOD

1.1 Circuit used for detemination

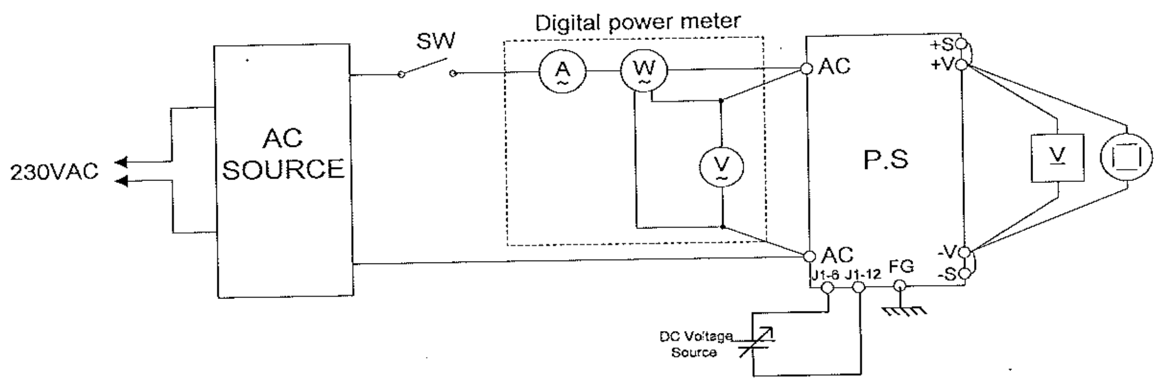
(1) Steady state data



(2) Warm up voltage drift characteristic same as Steady state data

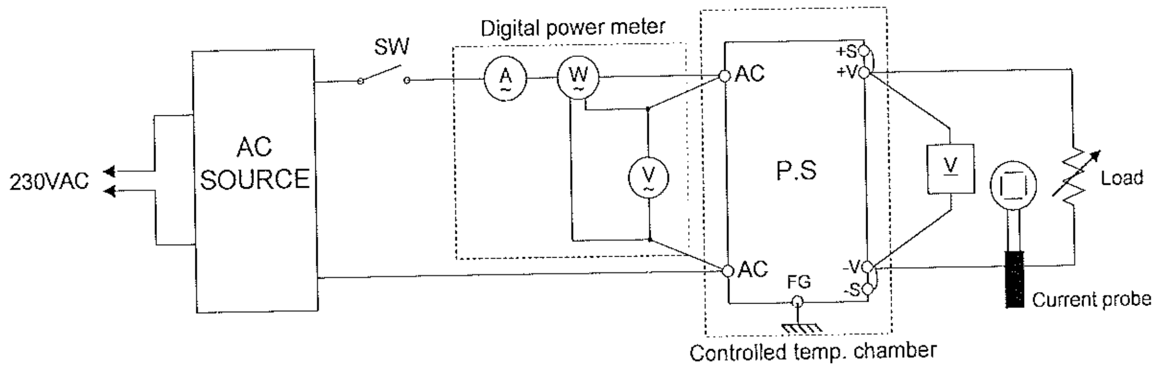
(3) Warm up current drift characteristic same as Steady state data

(4) Over voltage protection (OVP) characteristics



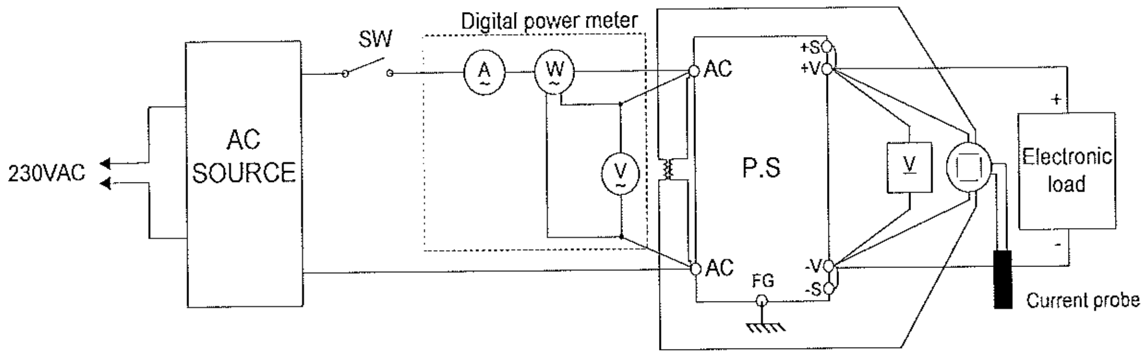
(5) Output voltage rise/fall characteristics same as Steady state data

(6) Output current rise/fall characteristics

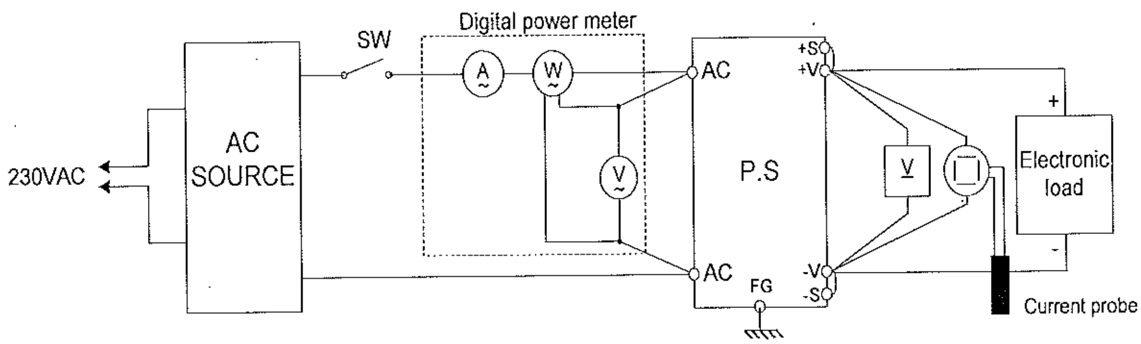


1.1 Circuit used for detemination

(7) Dynamic line voltage and current response characteristics

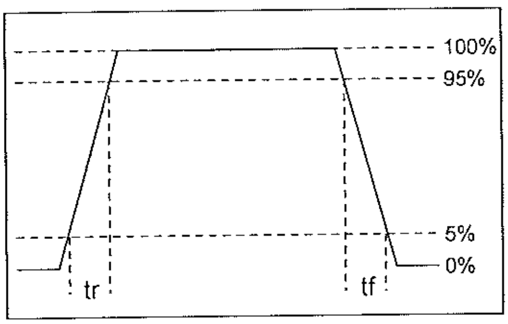


(8) Dynamic load voltage and current response characteristics

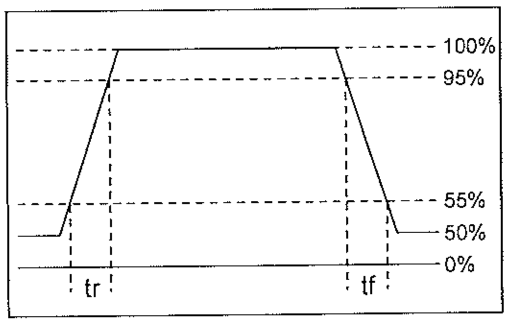


Constant Voltage mode

Output current waveform
Iout 0% ↔ 100%

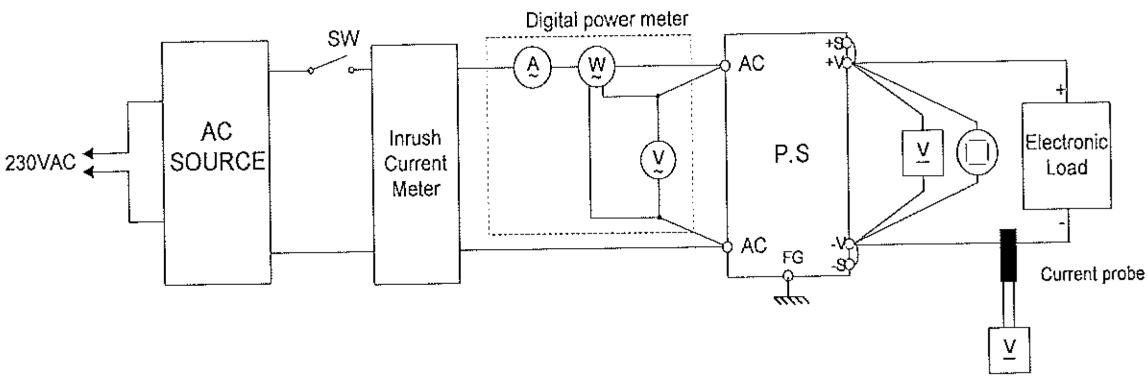


Output current waveform
Iout 50% ↔ 100%



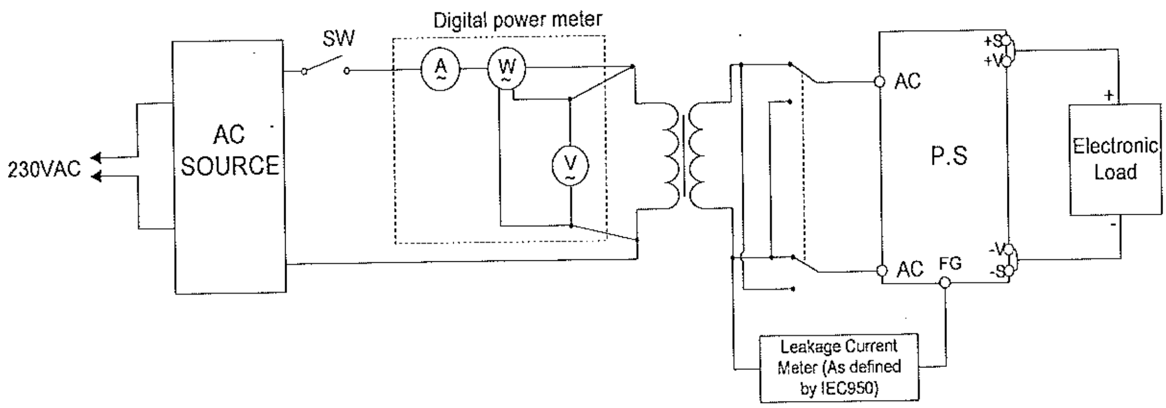
1.1 Circuit used for detemination

(9) Response to brown-out characteristic



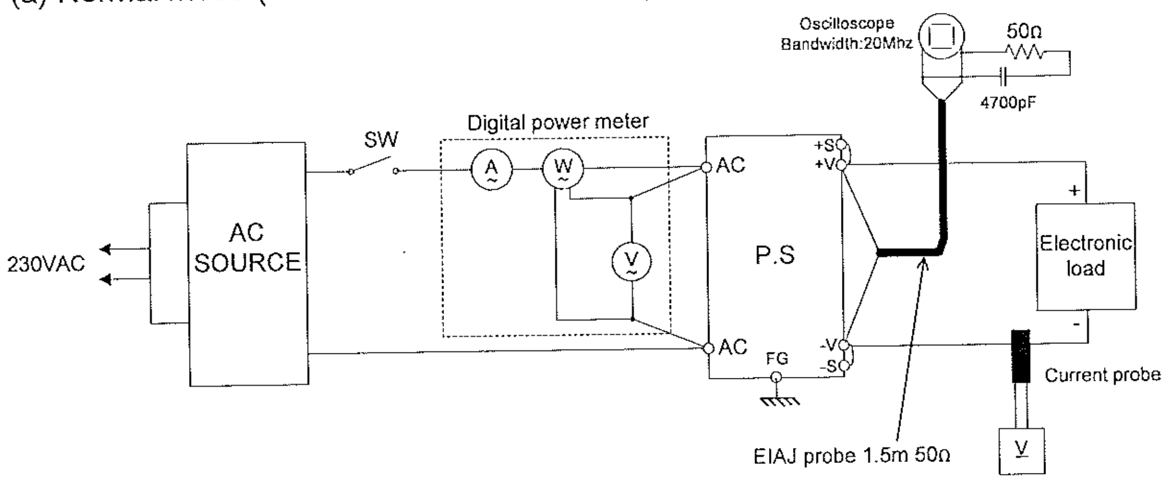
(10) Inrush current characteristics same as Response to brown-out

(11) Leakage current characteristics



(12) Output Voltage ripple & noise waveform 10V up to 100V models

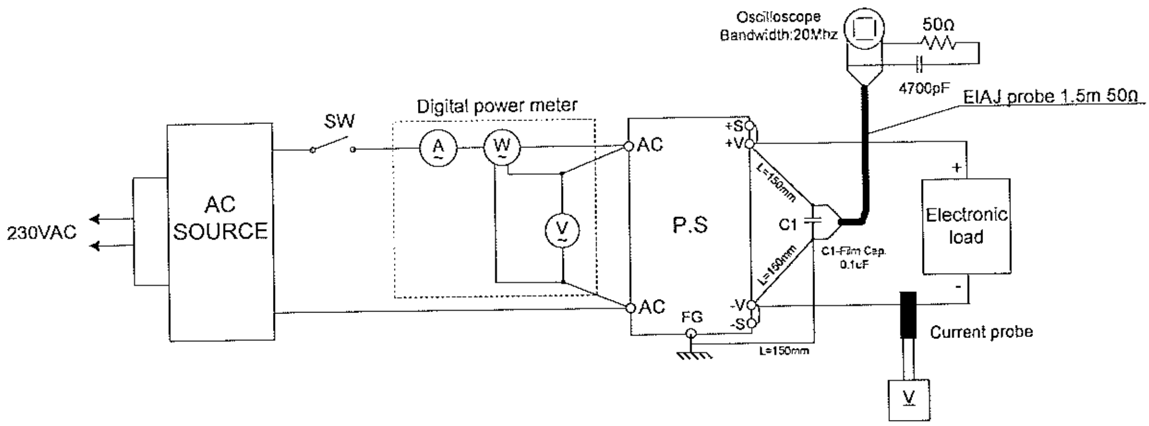
(a) Normal mode (JEITA Standard RC-9131A)



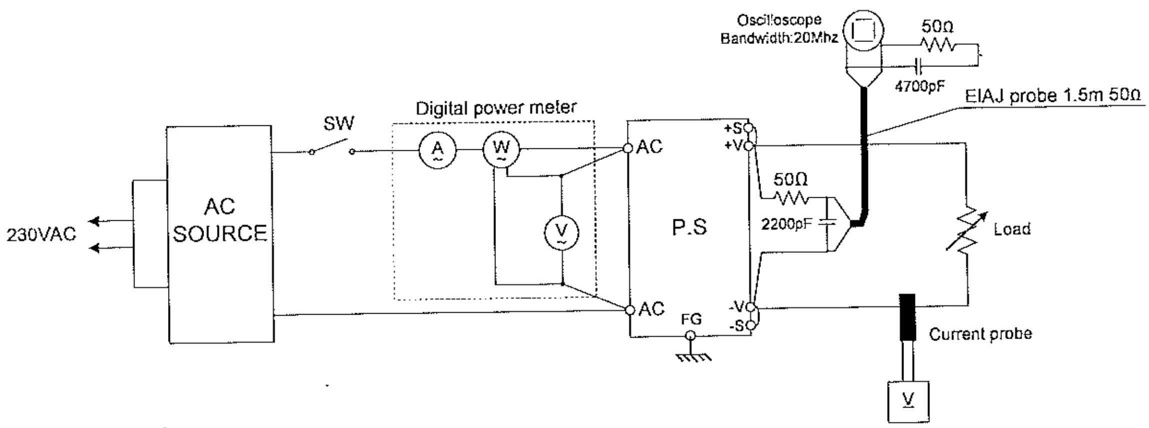
1.1 Circuit used for detemination

(12) Output Voltage ripple & noise waveform 10V up to 100V models

(b) Normal + Common mode



(13) Output Current rms ripple 10V to 100V models



Notes:
(*) Ouput Current rms ripple =Output Voltage rms ripple divided by the Load resistance.

1.2 List of equipment used

	EQUIPMENT USED	MANUFACTURER	MODEL No.
1	Digital oscilloscope	YOKOGAWA	DL7100
2	Digital oscilloscope	YOKOGAWA	DL1740EL
3	Digital multimeter	AGILENT	34401A
4	Digital power meter	YOKOGAWA	WT230
5	AC Source	CHROMA	6590
6	AC Source	CHROMA	6530
7	Electronic load	H&H	ZS6060 SC150
8	Electronic load	H&H	ZS7006
9	Electronic load	H&H	ZS7060
10	Electronic load	CHROMA	63203
11	Electronic load	CHROMA	63204
12	Electronic load	CHROMA	63206
13	Controlled temp. chamber	THERMOTRON	SM-16-3800
14	Controlled temp. chamber	THERMOTRON	SE-600-5-5
15	Controlled temp. chamber	THERMOTRON	SE-600-6-6
16	Leakage Current Tester	KIKUSUI	TOS3200
17	Voltage probe	YOKOGAWA	700988
18	Current probe	YOKOGAWA	701933
19	Current probe	LEM Danfysik	IT 60-S Ultrastab
20	Inrush Current Meter	TAKAMISAWA	PSA-210
21	Data Acquisition/Switch Unit	AGILENT	34970A

2. CHARACTERISTICS

2.1 Steady state data

(1) Regulation - line and load, temperature drift

Z10-72

Condition: Ta = 25°C

1. Regulation - Line & Load, C.V mode (Readings in [V])

	Vin (AC)					
Io	**85**	**100**	**200**	**265**	**Line Regulation**	
0%	9.9990	9.9990	9.9990	9.9990	0.0	0.000
25%	9.9987	9.9987	9.9987	9.9987	0.0	0.000
50%	9.9984	9.9984	9.9984	9.9984	0.0	0.000
75%	9.9980	9.9980	9.9980	9.9981	0.0	0.000
100%	9.9977	9.9977	9.9977	9.9977	0.0	0.000
Load	1.3	1.3	1.3	1.3	**ΔV (mV)**	**(%)**
Regulation	0.013	0.013	0.013	0.013	**(%)**	

2. Temperature drift, C.V mode

Conditions: Vin:100Vac
Iout:100%

Ta	**0°C**	**25°C**	**50°C**	**Temp. Coefficient (0°~50°C)**	
Vout	9.996	9.994	9.993	3 mV	6 PPM/°C

2.1 Steady state data

(1) Regulation - line and load, temperature drift

Z36-24

Condition: Ta = 25°C

1. Regulation - Line & Load, C.V mode (Readings in [V])

	Vin (AC)					
Io	85	100	200	265	Line Regulation	
0%	35.9985	35.9989	35.9987	35.9985	0.4	0.001
25%	35.9983	35.9985	35.9986	35.9984	0.3	0.001
50%	35.9981	35.9984	35.9985	35.9982	0.4	0.001
75%	35.9980	35.9981	35.9984	35.9981	0.4	0.001
100%	35.9979	35.9981	35.9981	35.9981	0.2	0.001
Load	0.6	0.8	0.6	0.4	ΔV (mV)	(%)
Regulation	0.002	0.002	0.002	0.001	(%)	

2. Temperature drift, C.V mode

Conditions: Vin:100Vac
Iout:100%

Ta	0°C	25°C	50°C	Temp. Coefficient (0°~50°C)	
Vout	36.001	35.992	35.986	15 mV	8 PPM/°C

2.1 Steady state data

(1) Regulation - line and load, temperature drift

Z100-8

Condition: Ta = 25°C

1. Regulation - Line & Load, C.V mode (Readings in [V])

	Vin (AC)					
Io	85	100	200	265	Line Regulation	
0%	99.9924	99.9923	99.9925	99.9925	0.3	0.000
25%	99.9921	99.9919	99.9922	99.9920	0.2	0.000
50%	99.9918	99.9917	99.9917	99.9918	0.1	0.000
75%	99.9913	99.9913	99.9913	99.9913	0.1	0.000
100%	99.9910	99.9912	99.9912	99.9913	0.2	0.000
Load	1.3	1.1	1.3	1.3	ΔV (mV)	(%)
Regulation	0.001	0.001	0.001	0.001	(%)	

2. Temperature drift, C.V mode

Conditions: Vin:100Vac
Iout:100%

Ta	0°C	25°C	50°C	Temp. Coefficient (0°~50°C)	
Vout	99.999	99.978	99.969	30 mV	6 PPM/°C

2.1 Steady state data

(1) Regulation - line and load, temperature drift

Z10-72

Condition: Ta = 25°C

1. Regulation - Line & Load, C.C mode (*) (Readings in [A])

	Vin (AC)					
Vo	85	100	200	265	Line Regulation	
0%	71.9741	71.9741	71.9741	71.9747	0.6	0.001
25%	71.9733	71.9733	71.9733	71.9726	0.7	0.001
50%	71.9719	71.9719	71.9719	71.9716	0.3	0.000
75%	71.9712	71.9712	71.9712	71.9712	0.0	0.000
100%	71.9712	71.9712	71.9712	71.9712	0.0	0.000
Load	2.9	2.9	2.9	3.5	ΔI (mA)	(%)
Regulation	0.004	0.004	0.004	0.005	(%)	

Notes:
(*) Not including load regulation thermal drift effect.

2. Temperature drift, C.C mode

Conditions: Vin:100Vac
Vout:100%

Ta	0°C	25°C	50°C	Temp. Coefficient (0°~50°C)	
Iout	71.9869	71.9673	71.9463	41 mA	11 PPM/°C

2.1 Steady state data

(1) Regulation - line and load, temperature drift

Z36-24

Condition: Ta = 25°C

1. Regulation - Line & Load, C.C mode (*) (Readings in [A])

	Vin (AC)					
Vo	**85**	**100**	**200**	**265**	**Line Regulation**	
0%	23.9780	23.9783	23.9782	23.9783	0.3	0.001
25%	23.9765	23.9767	23.9770	23.9772	0.7	0.003
50%	23.9779	23.9778	23.9778	23.9772	0.7	0.003
75%	23.9768	23.9764	23.9764	23.9764	0.4	0.002
100%	23.9776	23.9772	23.9768	23.9768	0.9	0.004
Load	1.5	1.9	1.8	1.9	**ΔI (mA)**	**(%)**
Regulation	0.006	0.008	0.007	0.008	**(%)**	

Notes:
(*) Not including load regulation thermal drift effect.

2. Temperature drift, C.C mode

Conditions: Vin:100Vac
Vout:100%

Ta	**0°C**	**25°C**	**50°C**	**Temp. Coefficient (0°~50°C)**	
Iout	23.9956	23.9866	23.9795	16 mA	13 PPM/°C

2.1 Steady state data

(1) Regulation - line and load, temperature drift

Z100-8

Condition: Ta = 25°C

1. Regulation - Line & Load, C.C mode (*) (Readings in [A])

	Vin (AC)					
Vo	**85**	**100**	**200**	**265**	**Line Regulation**	
0%	8.0116	8.0116	8.0116	8.0115	0.1	0.001
25%	8.0111	8.0110	8.0110	8.0110	0.1	0.002
50%	8.0107	8.0106	8.0105	8.0105	0.2	0.002
75%	8.0102	8.0101	8.0100	8.0099	0.2	0.003
100%	8.0096	8.0095	8.0095	8.0094	0.2	0.003
Load	2.0	2.0	2.1	2.1	**ΔI (mA)**	**(%)**
Regulation	0.025	0.026	0.026	0.027	**(%)**	

Notes:
(*) Not including load regulation thermal drift effect.

2. Temperature drift, C.C mode

Conditions: Vin:100Vac
Vout:100%

Ta	**0°C**	**25°C**	**50°C**	**Temp. Coefficient (0°~50°C)**	
Iout	7.9992	7.9969	7.9980	1.2 mA	3 PPM/°C

2.1 Steady state data

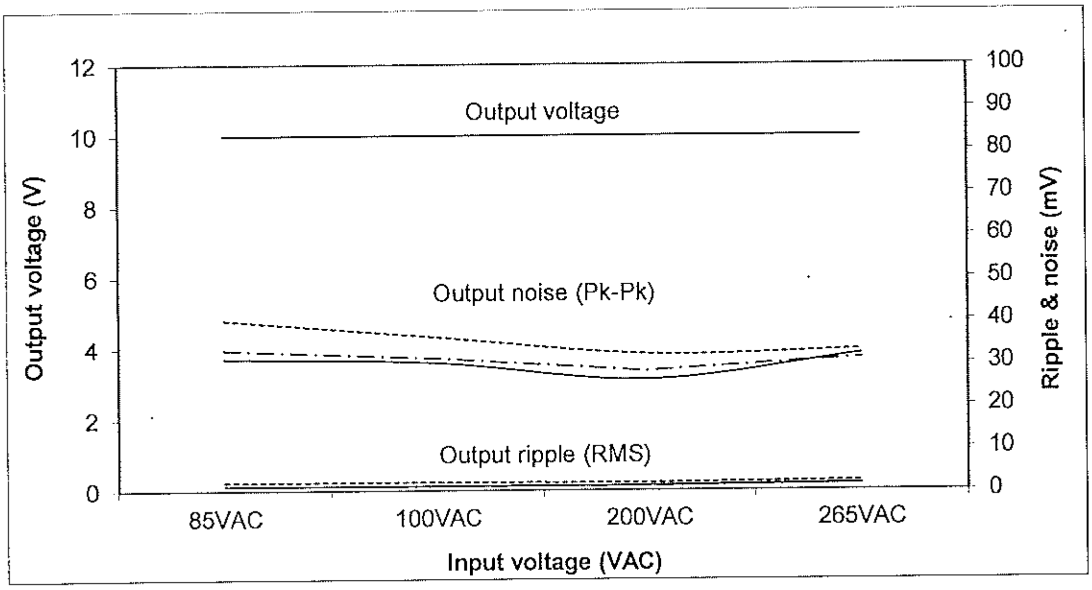
(2) Output voltage and Ripple noise voltage vs. Input voltage

C.V mode

Conditions: Iout:100%

Z10-72

Ta: 0°C 25°C 50°C



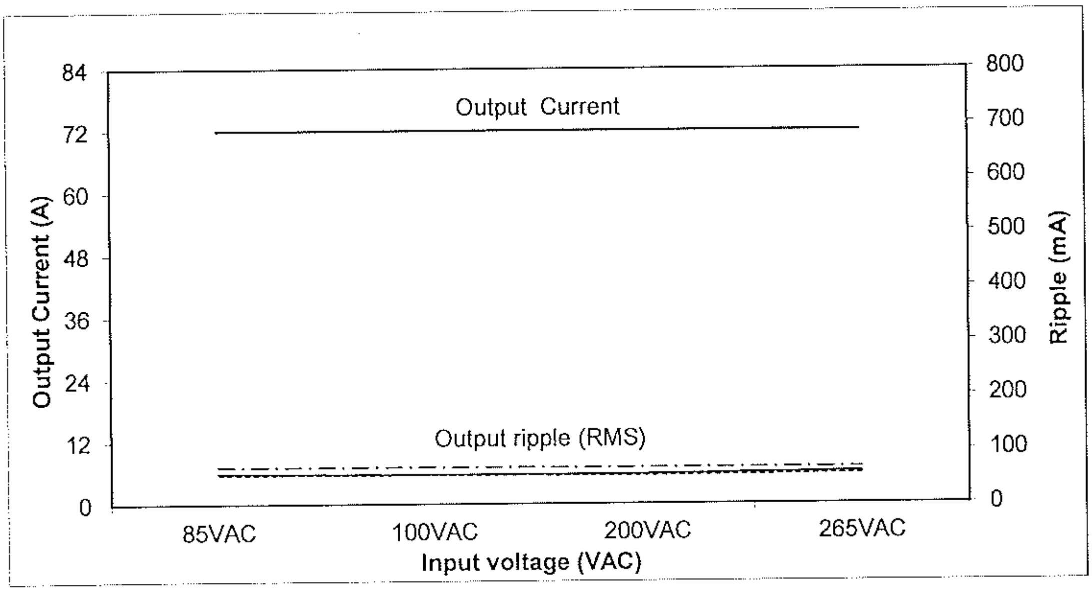
(3) Output current and Ripple noise current vs. Input voltage

C.C mode

Conditions: Vout:100%

Z10-72

Ta: 0°C 25°C 50°C



2.1 Steady state data

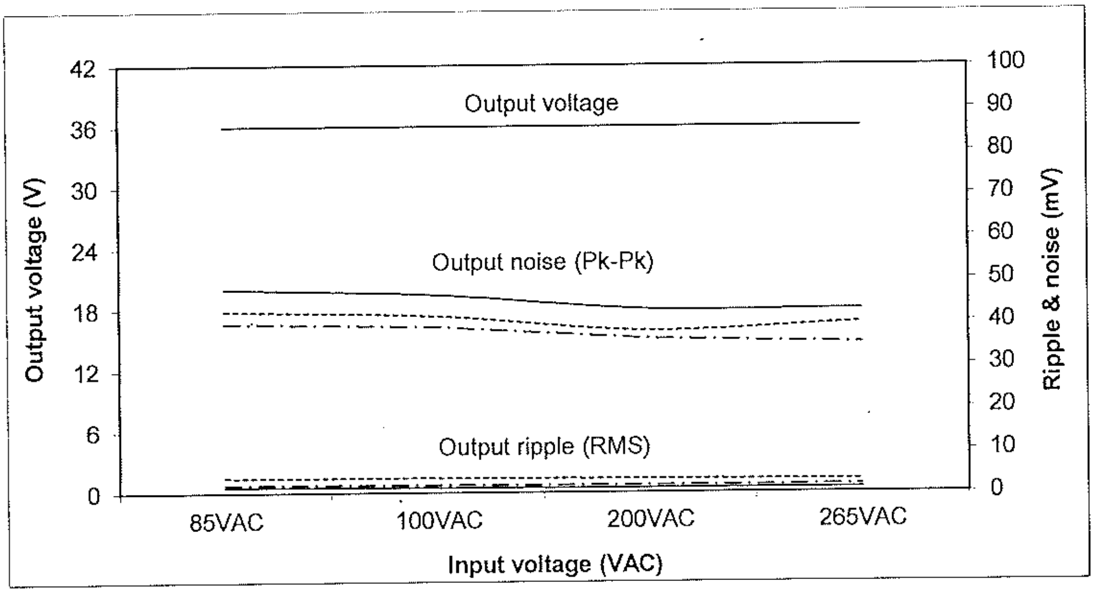
(2) Output voltage and Ripple noise voltage vs. Input voltage

C.V mode

Conditions: Iout:100%

Z36-24

Ta: 0°C, 25°C, 50°C



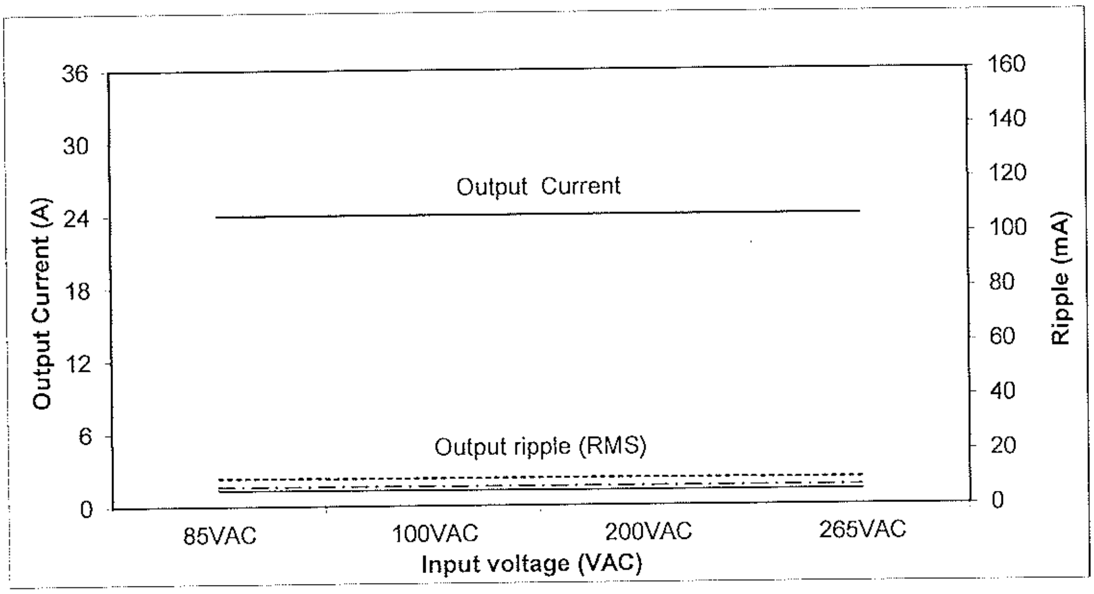
(3) Output current and Ripple noise current vs. Input voltage

C.C mode

Conditions: Vout:100%

Z36-24

Ta: 0°C, 25°C, 50°C



2.1 Steady state data

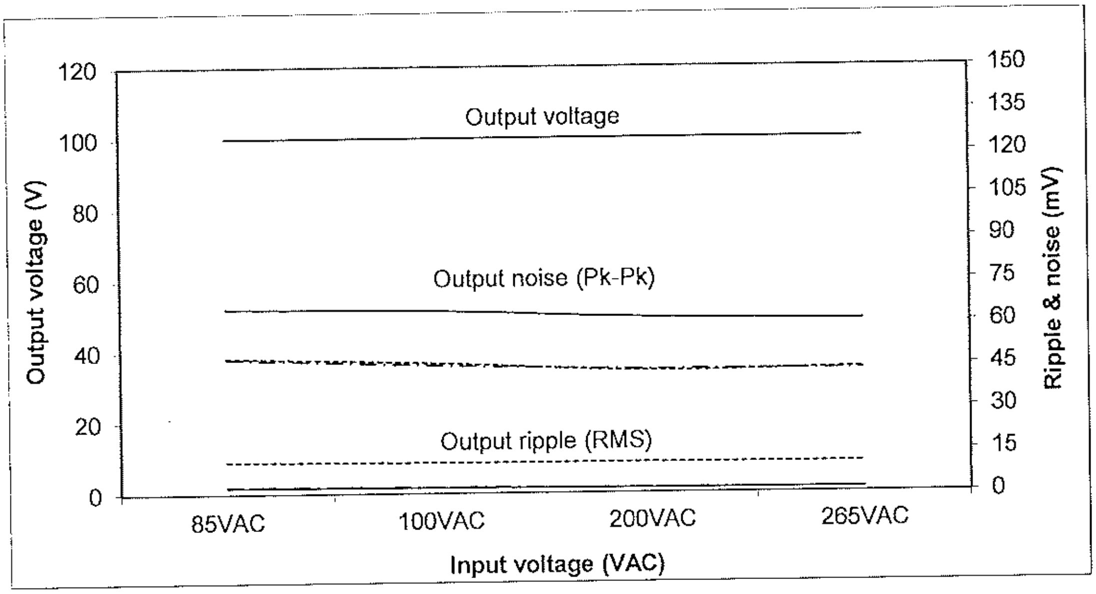
(2) Output voltage and Ripple noise voltage vs. Input voltage

C.V mode

Conditions: Iout:100%

Z100-8

Ta: 0°C 25°C 50°C



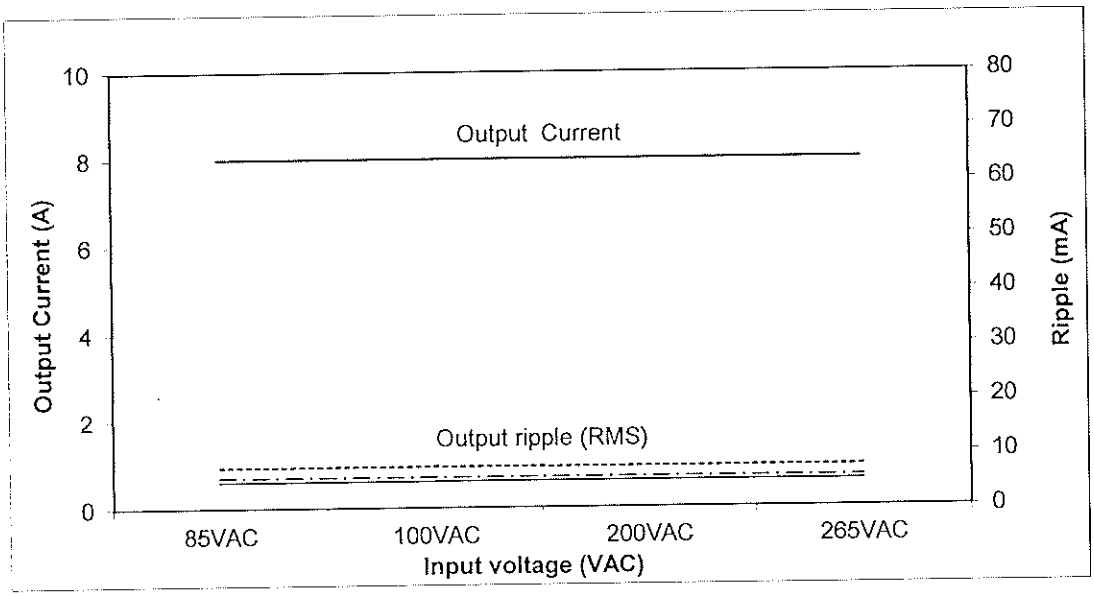
(3) Output current and Ripple noise current vs. Input voltage

C.C mode

Conditions: Vout:100%

Z100-8

Ta: 0°C 25°C 50°C

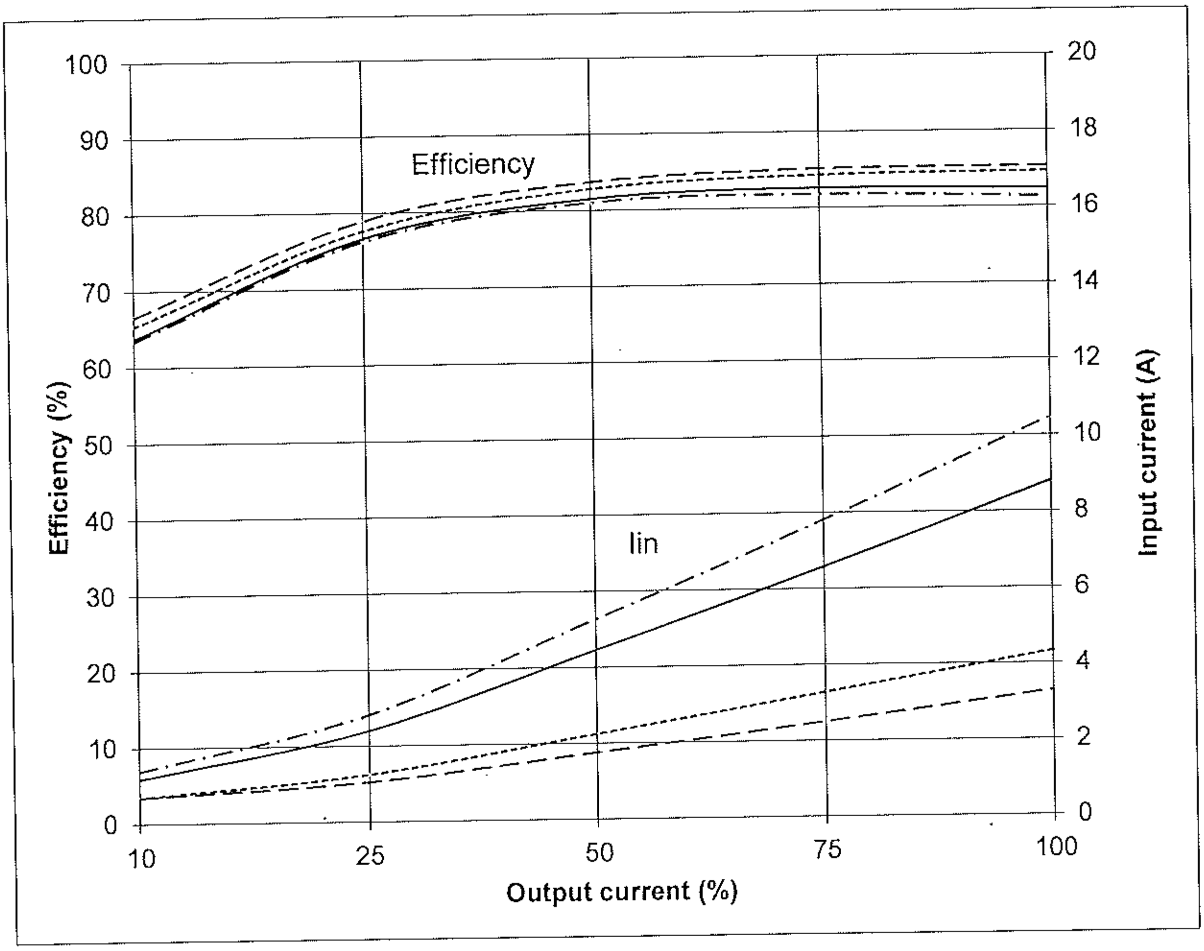


2.1 Steady state data

(4) Efficiency and Input current vs. Output current

Conditions:
Vin: 85Vac
100Vac
200Vac
265Vac
Vout:100%
Ta: 25°C

Z10-72

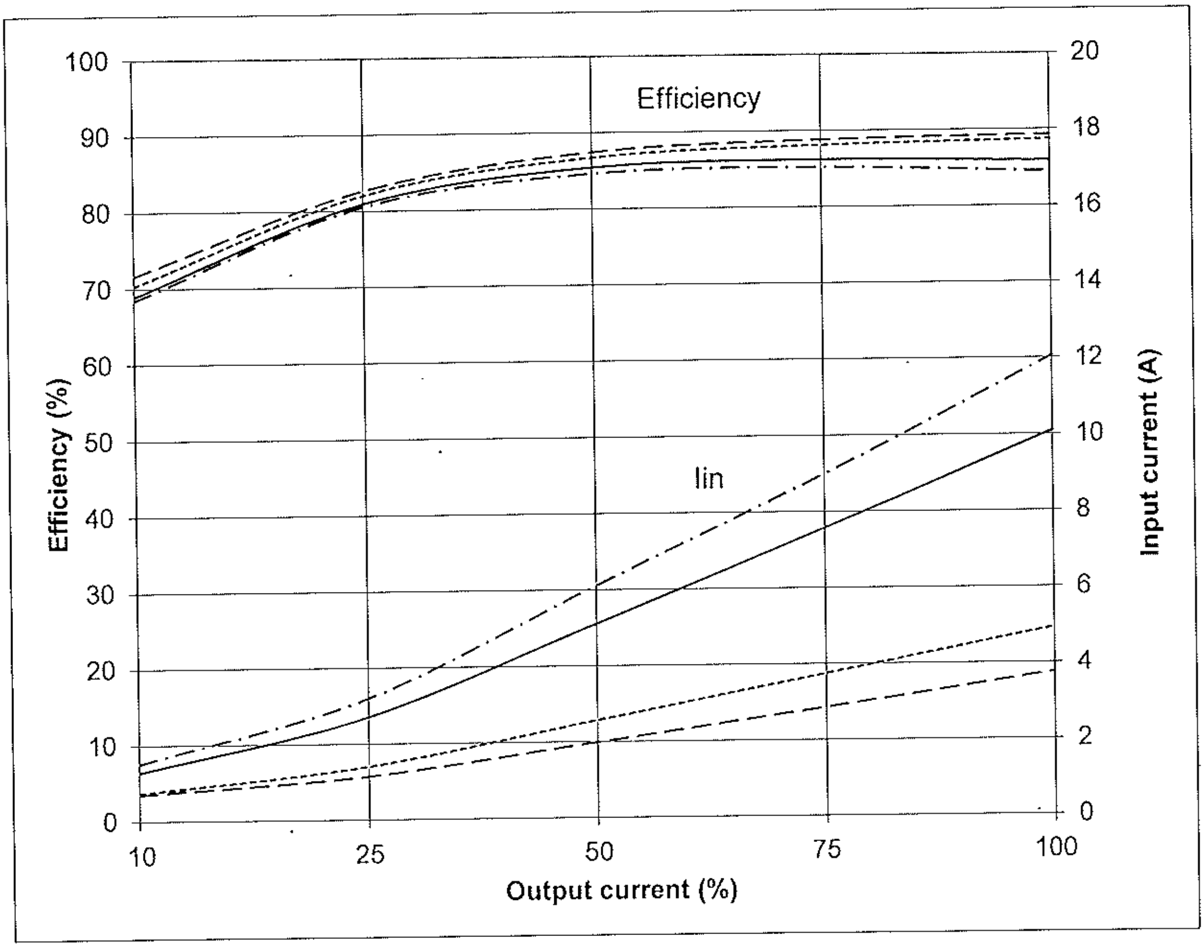


2.1 Steady state data

(4) Efficiency and Input current vs. Output current

Conditions:
Vin: 85Vac
100Vac
200Vac
265Vac
Vout:100%
Ta: 25°C

Z36-24

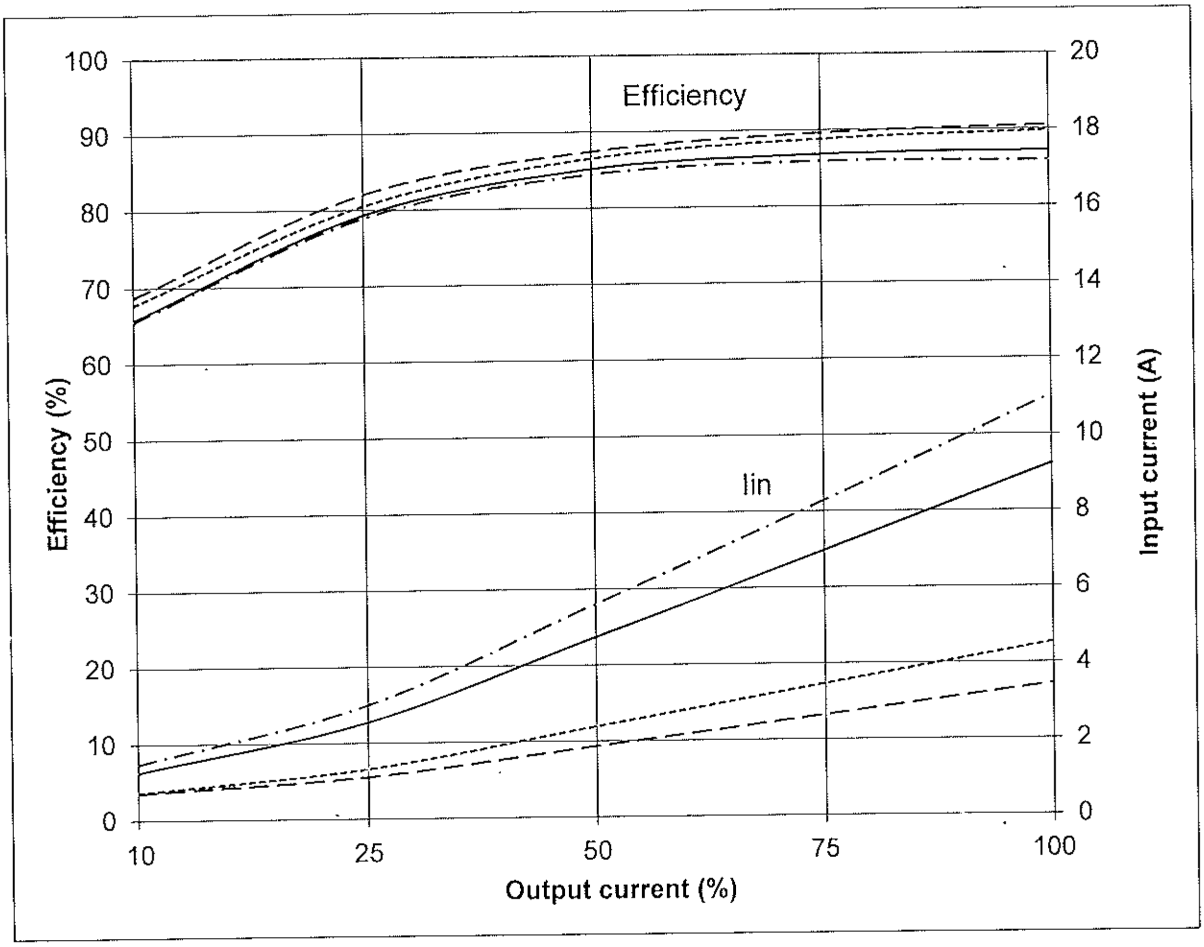


2.1 Steady state data

(4) Efficiency and Input current vs. Output current

Conditions:
Vin: 85Vac
100Vac
200Vac
265Vac
Vout:100%
Ta: 25°C

Z100-8

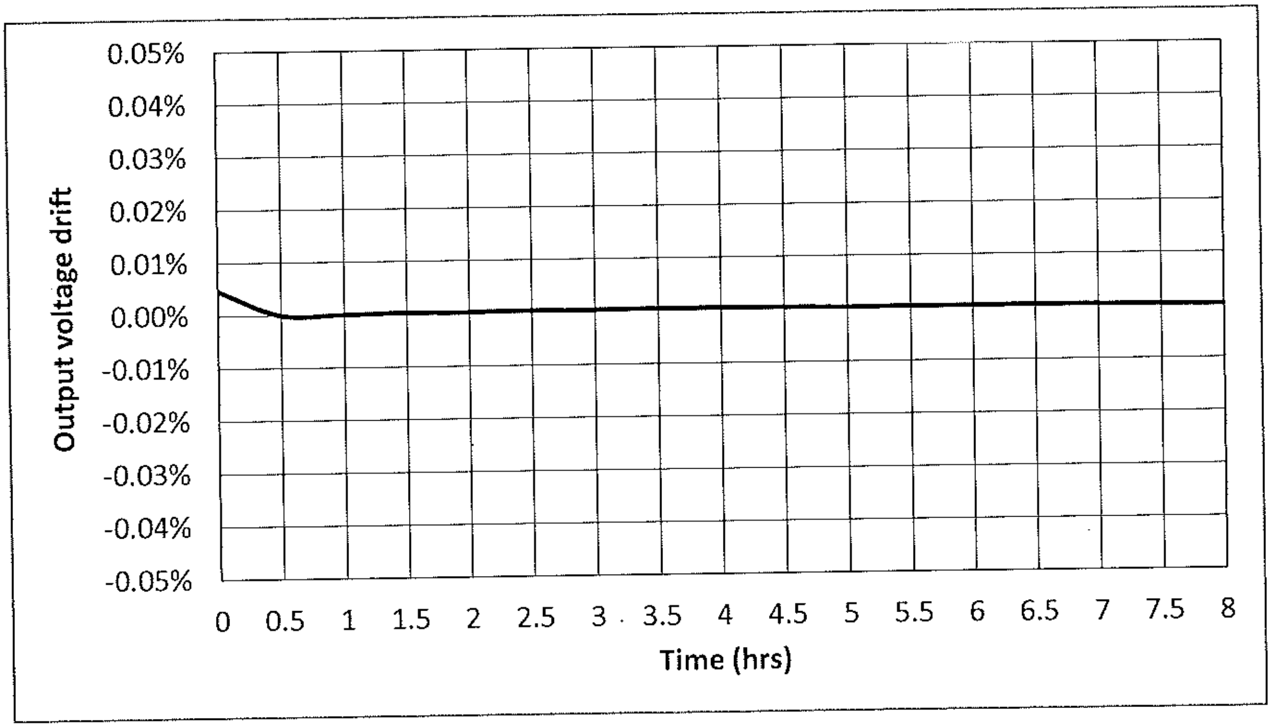


2.2 Warm up drift and stability

Conditions: Vin: 100Vac
Vout: 100%
Iout: 100%
Ta = 25°C

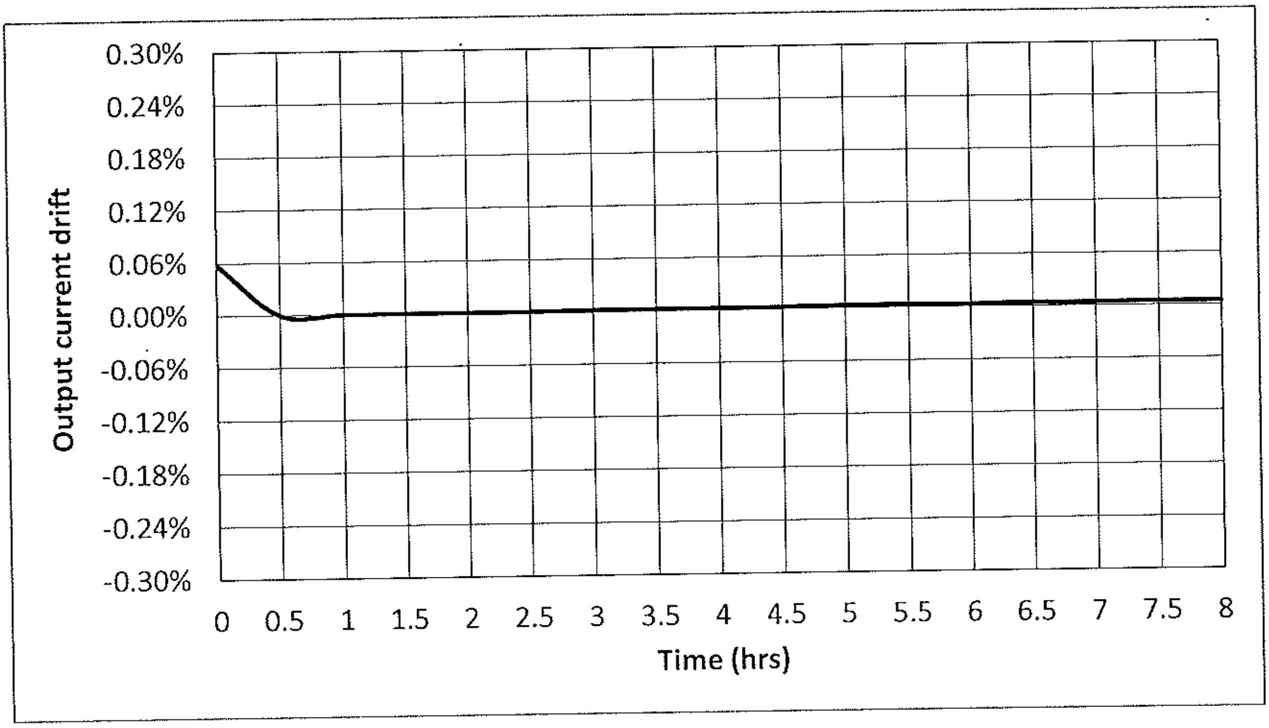
C.V mode

Z10-72



C.C mode

Z10-72

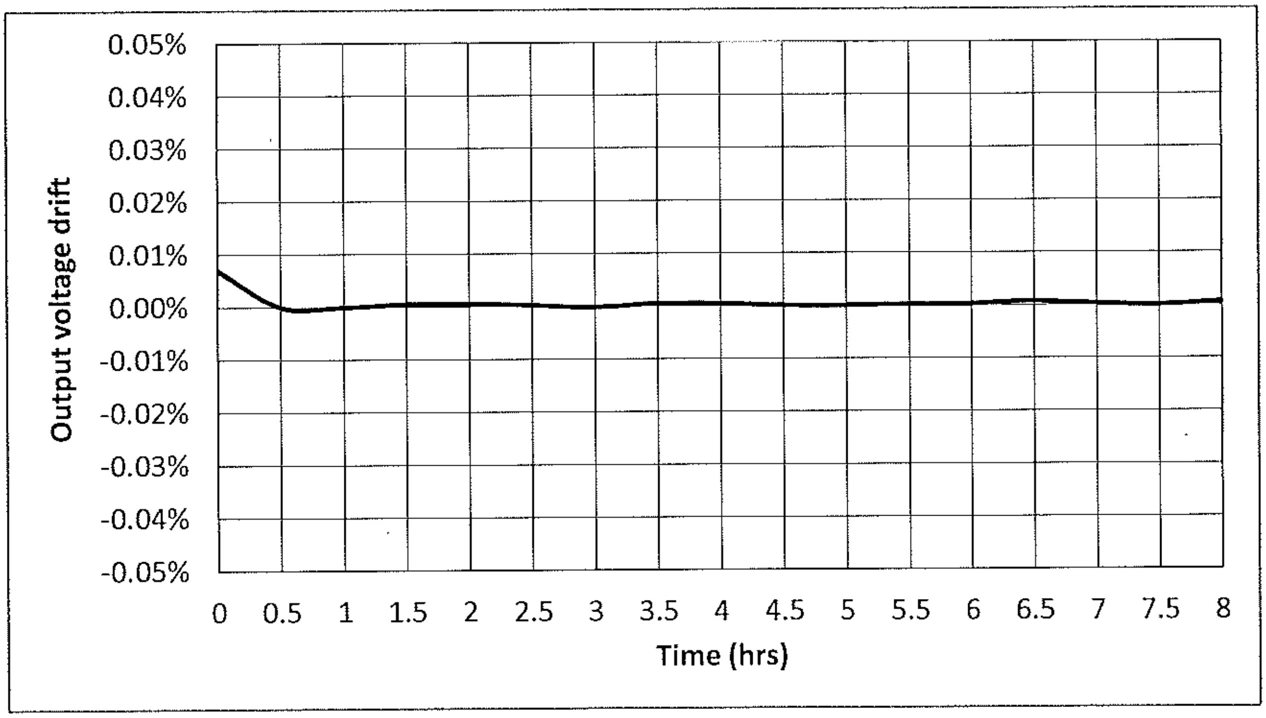


2.2 Warm up drift and stability

Conditions: Vin: 100Vac
Vout: 100%
Iout: 100%
Ta = 25°C

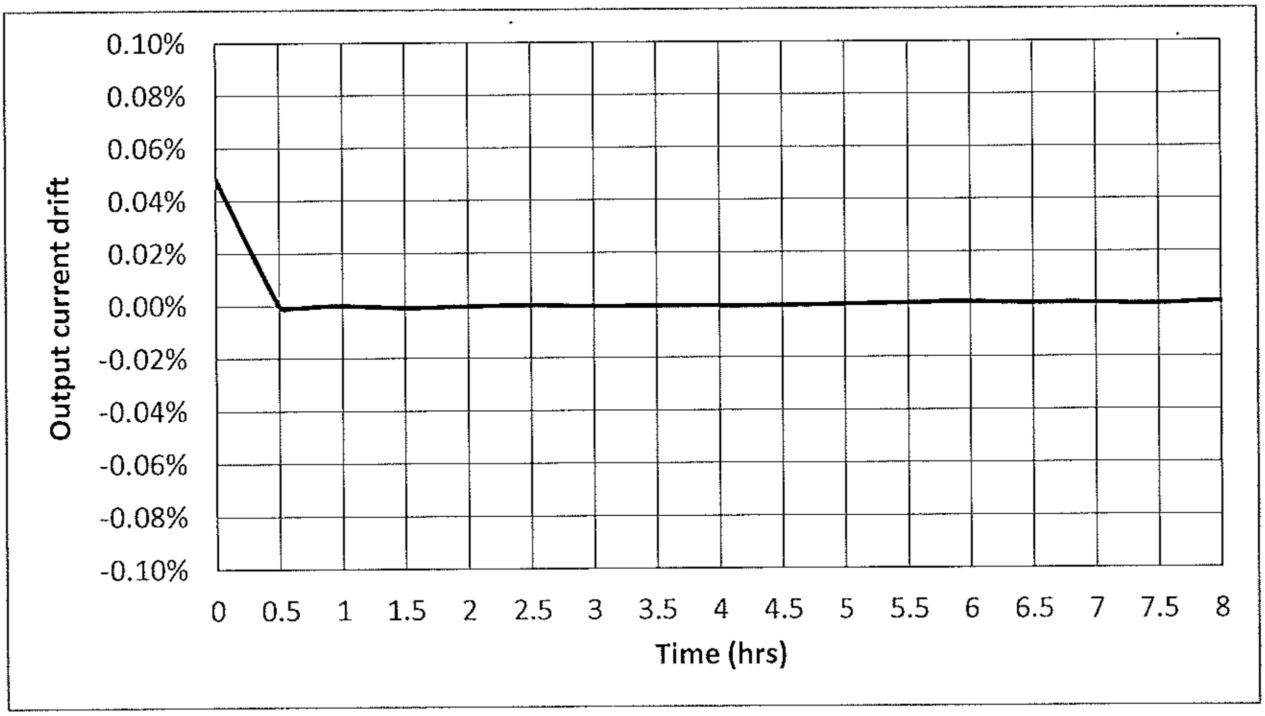
C.V mode

Z36-24



C.C mode

Z36-24

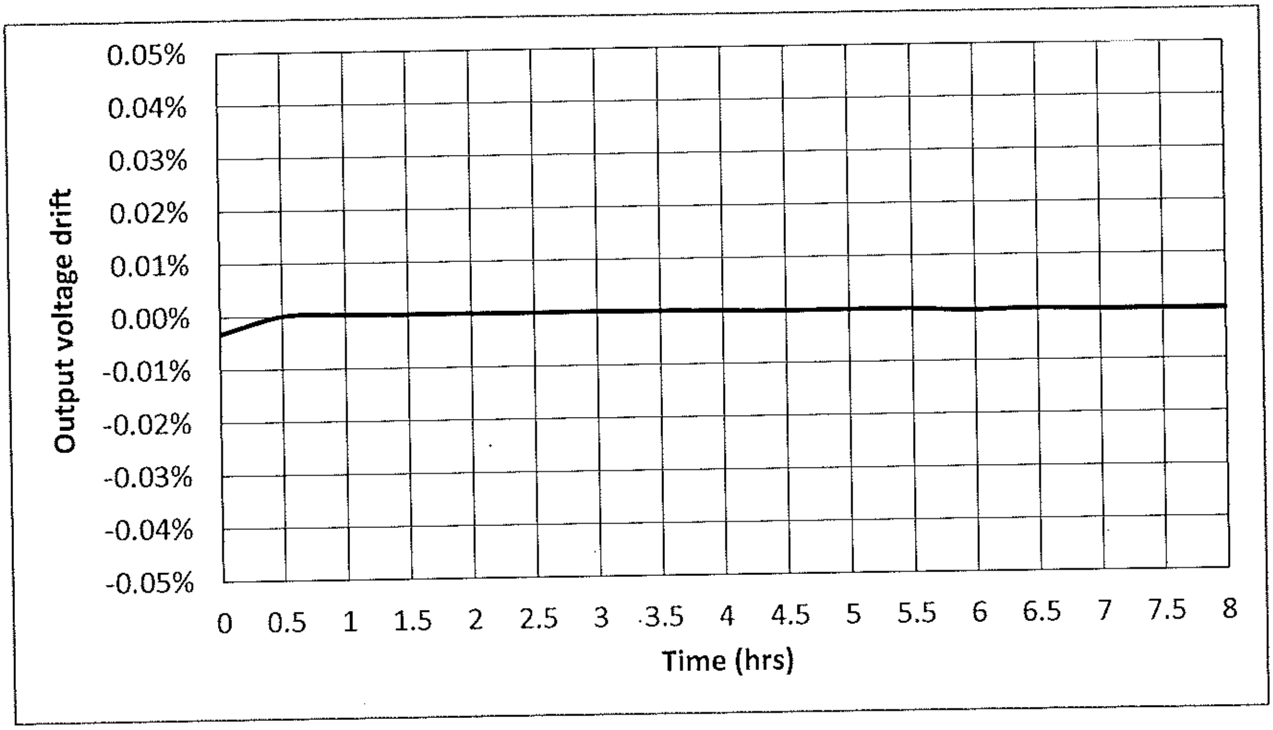


2.2 Warm up drift and stability

Conditions: Vin: 100Vac
Vout: 100%
Iout: 100%
Ta = 25°C

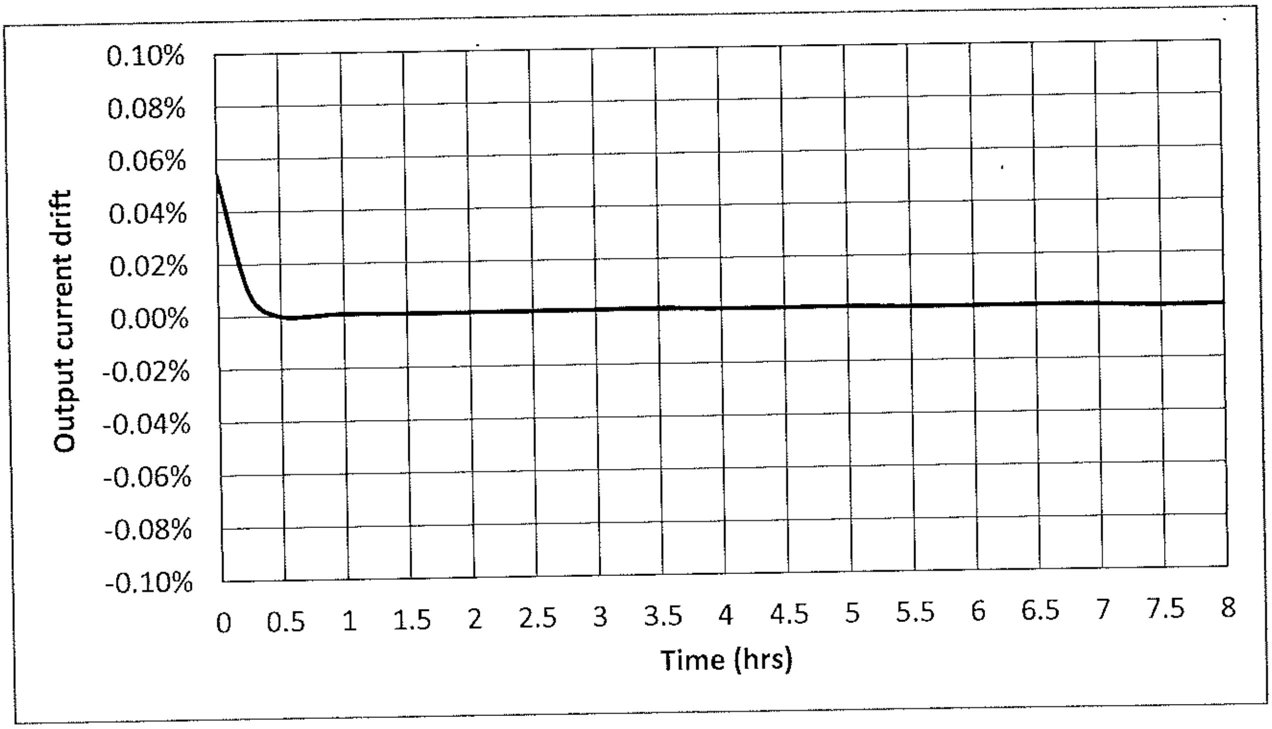
C.V mode

Z100-8



C.C mode

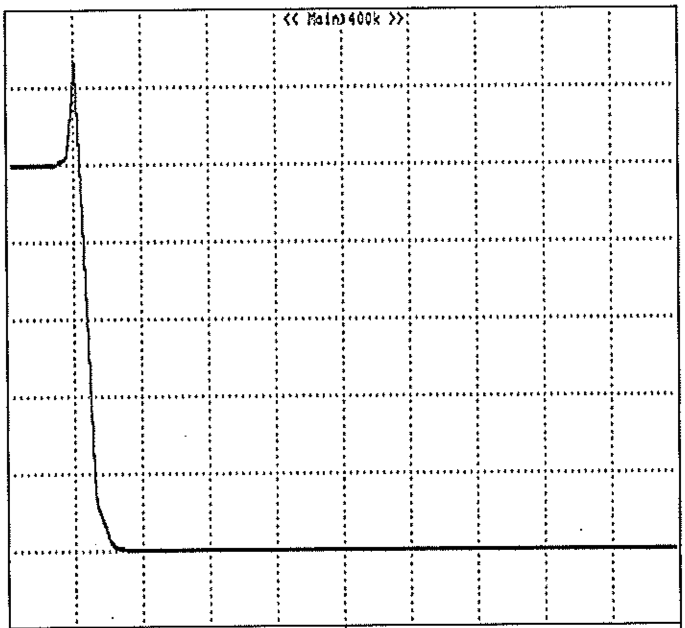
Z100-8



2.3 Over voltage protection (OVP) characteristics

Conditions: Vin: 100Vac
Iout: 0%
Ta = 25°C

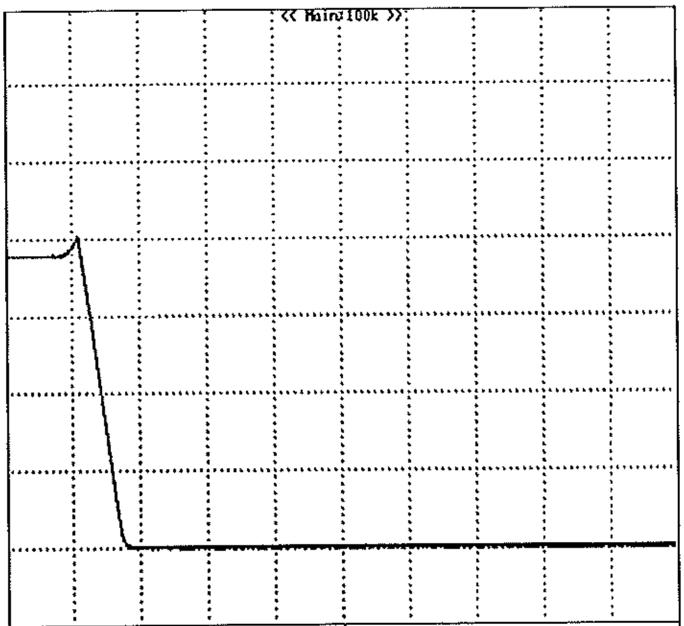
Z10-72



$2^{V}/_{DIV}$	$200^{ms}/_{DIV}$

OVP setting: 12V

Z36-24



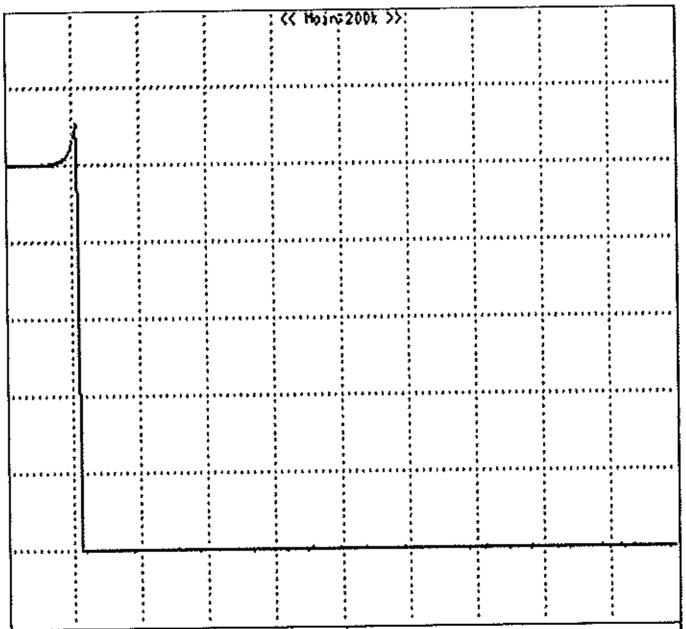
$10^{V}/_{DIV}$	$200^{ms}/_{DIV}$

OVP setting: 40V

2.3 Over voltage protection (OVP) characteristics

Conditions: Vin: 100Vac
Iout: 0%
Ta = 25°C

Z100-8



20 V/DIV	200 ms/DIV

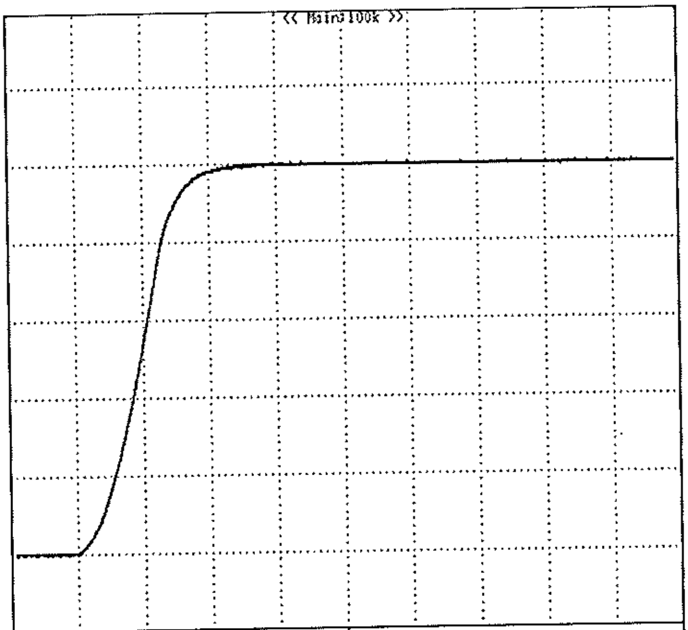
OVP setting: 110V

2.4 ON/OFF Output rise characteristics

Conditions: Vin: 100Vac
Vout: 100%
Iout: 0%
Iset= 105%
Ta = 25°C

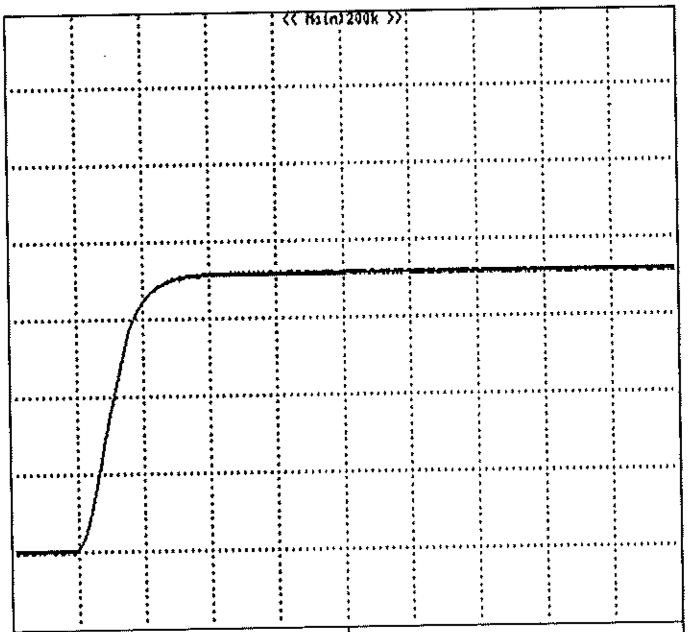
C.V mode

Z10-72



2 V/DIV	1 ms/DIV

Z36-24



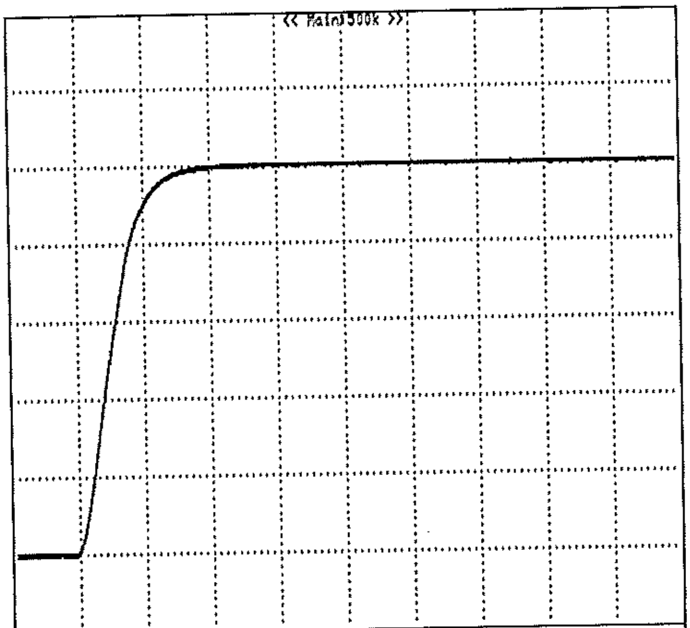
10 V/DIV	2 ms/DIV

2.4 ON/OFF Output rise characteristics

Conditions: Vin: 100Vac
Vout: 100%
Iout: 0%
Iset= 105%
Ta = 25°C

C.V mode

Z100-8



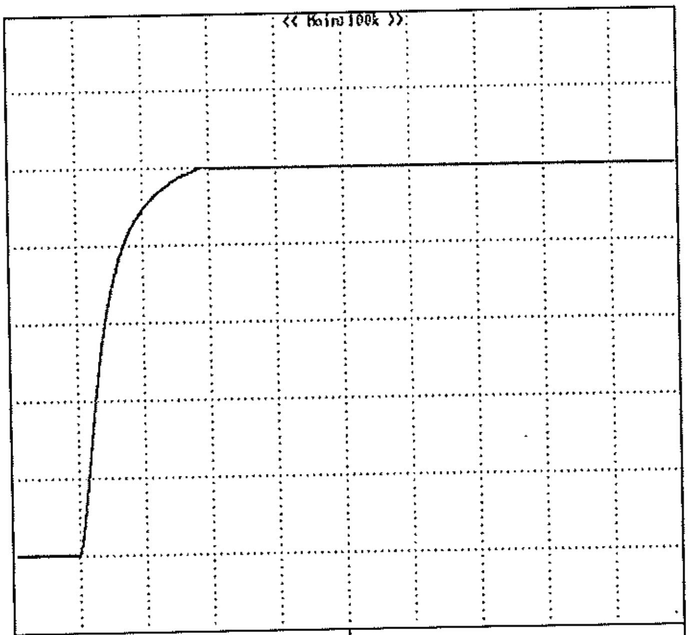
$20^{V}/_{DIV}$	$5^{ms}/_{DIV}$

2.4 ON/OFF Output rise characteristics

Conditions: Vin: 100Vac
Vout: 100%
Iout: 0%
Iset= 105%
Load: CR
Ta = 25°C

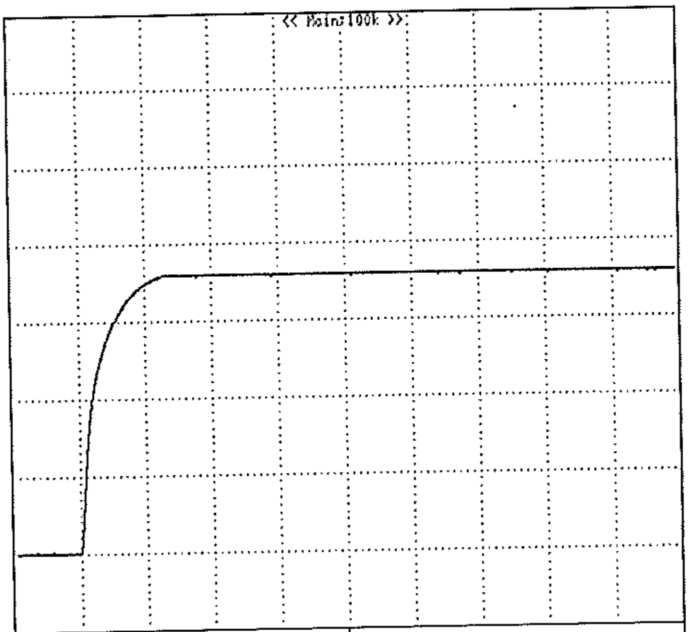
C.V mode

Z10-72



$2^{V}/_{DIV}$	$5^{ms}/_{DIV}$

Z36-24



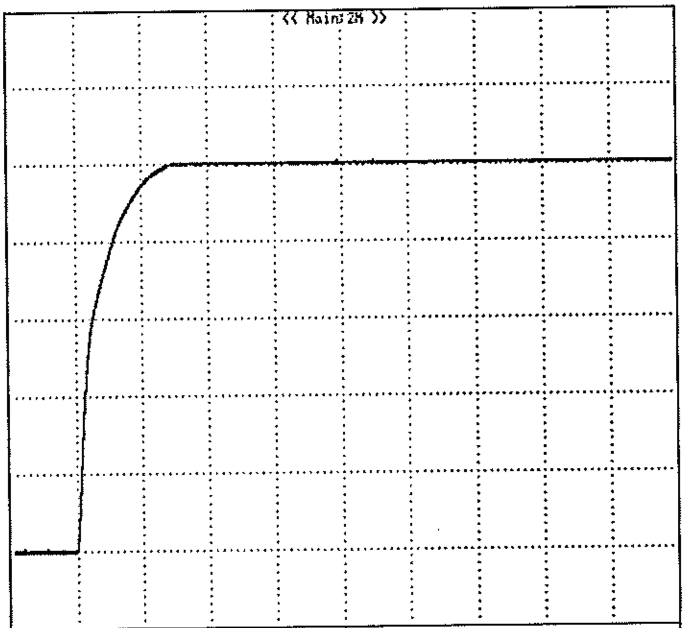
$10^{V}/_{DIV}$	$10^{ms}/_{DIV}$

2.4 ON/OFF Output rise characteristics

Conditions: Vin: 100Vac
Vout: 100%
Iout: 0%
Iset= 105%
Load: CR
Ta = 25°C

C.V mode

Z100-8



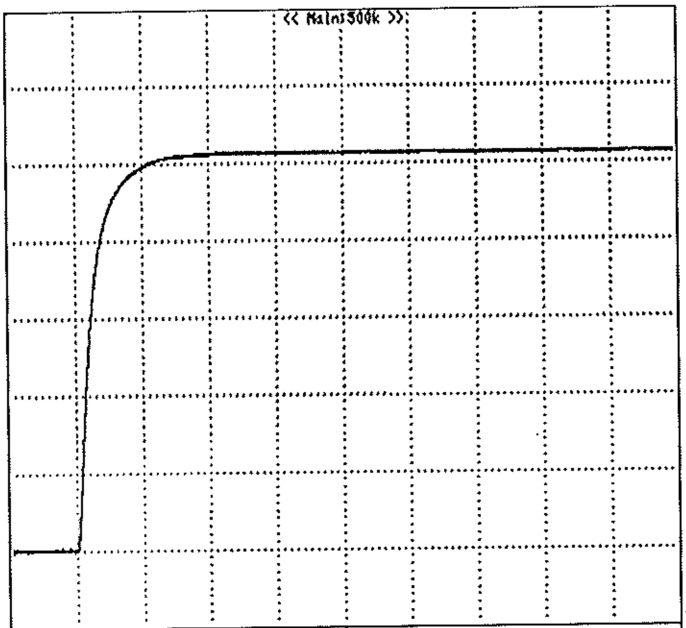
$20^{V}/_{DIV}$	$20^{ms}/_{DIV}$

2.4 ON/OFF Output rise characteristics

Conditions: Vin: 100Vac
Vout: 100%
Iout: 100%
Vset= 105%
Load: CR
Ta = 25°C

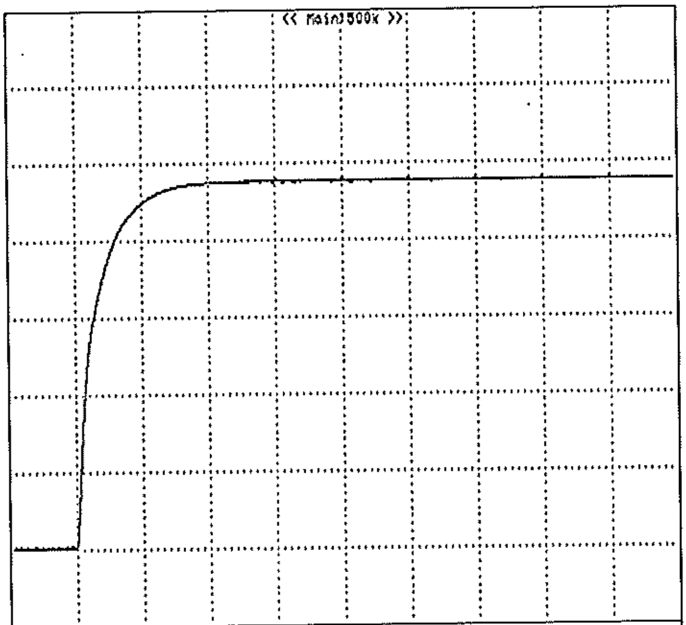
C.C mode

Z10-72



14 A/DIV	10 ms/DIV

Z36-24



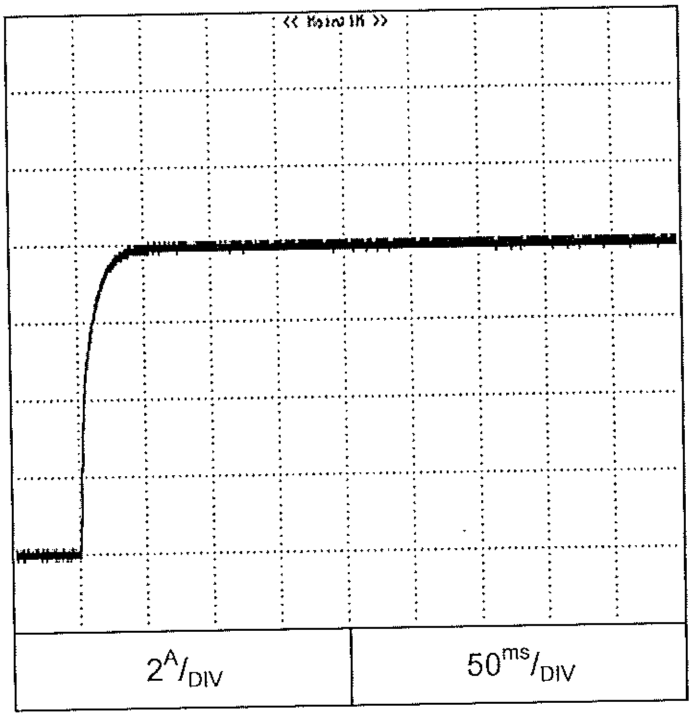
5 A/DIV	10 ms/DIV

2.4 ON/OFF Output rise characteristics

Conditions: Vin: 100Vac
Vout: 100%
Iout: 100%
Vset= 105%
Load: CR
Ta = 25°C

C.C mode

Z100-8

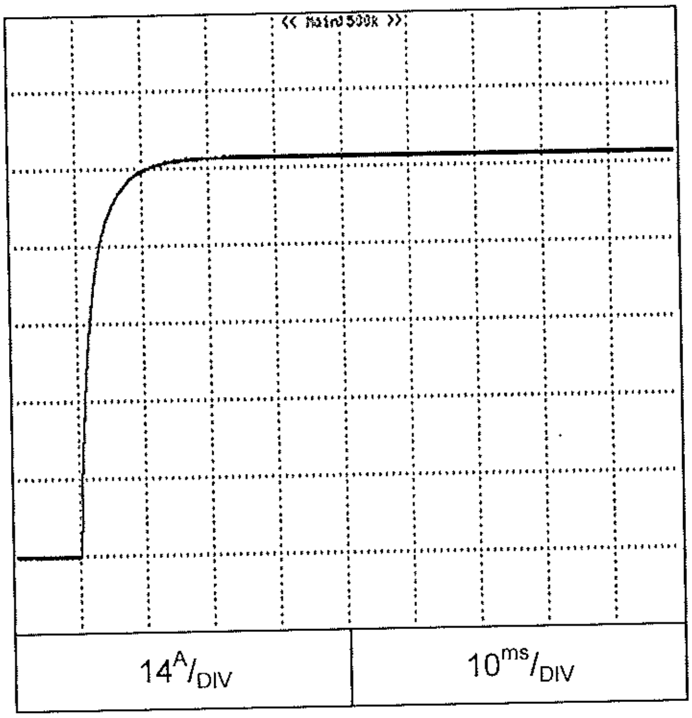


2.4 ON/OFF Output rise characteristics

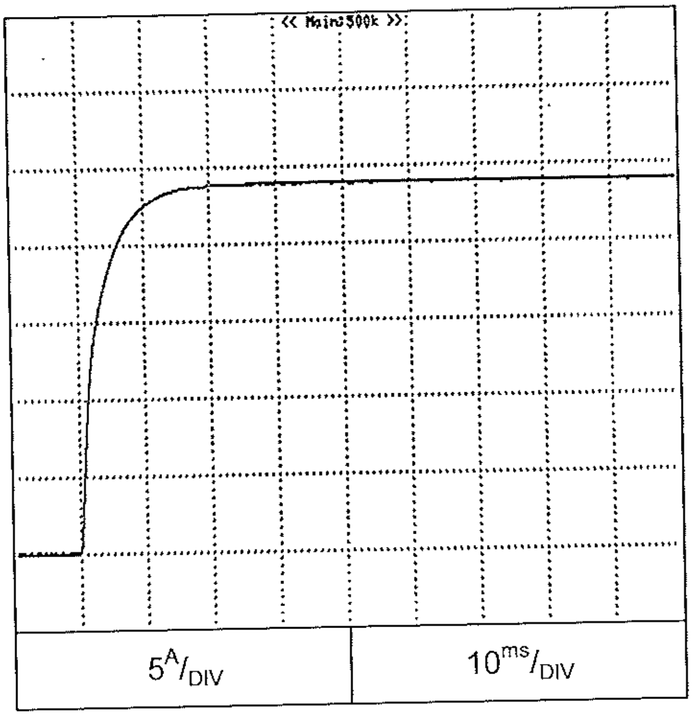
Conditions: Vin: 100Vac
Iout: 100%
Vset= 105%
shorted output
Ta = 25°C

C.C mode

Z10-72



Z36-24

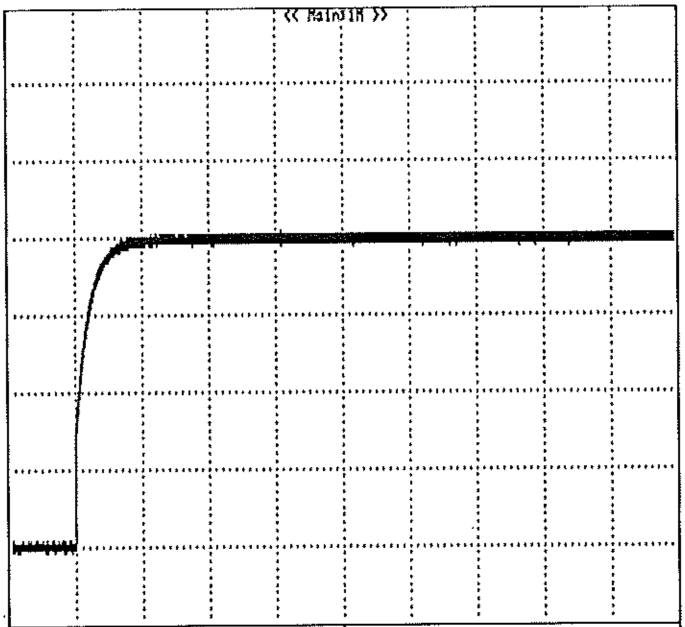


2.4 ON/OFF Output rise characteristics

Conditions: Vin: 100Vac
Iout: 100%
Vset= 105%
shorted output
Ta = 25°C

C.C mode

Z100-8



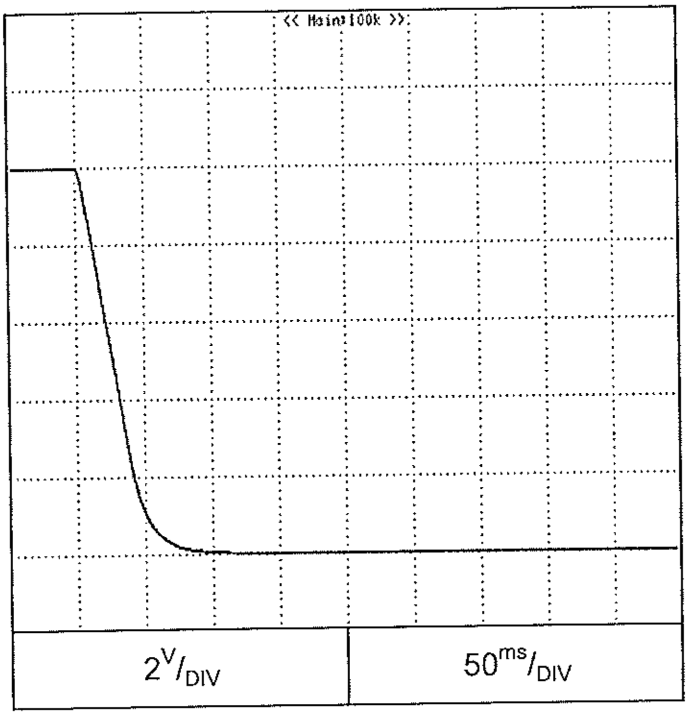
$2^{A}/_{DIV}$	$50^{ms}/_{DIV}$

2.5 ON/OFF Output fall characteristics

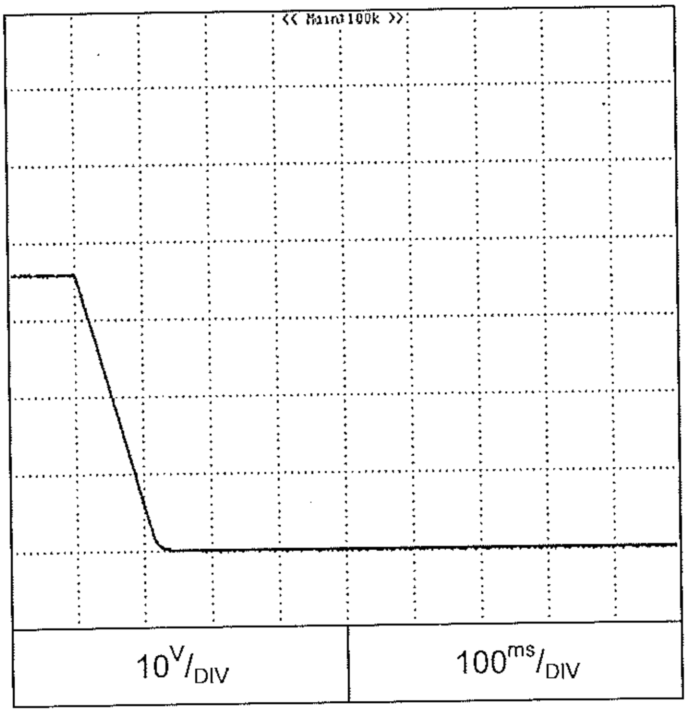
Conditions: Vin: 100Vac
Vout: 100%
Iout: 0%
Iset= 105%
Ta = 25°C

C.V mode

Z10-72



Z36-24

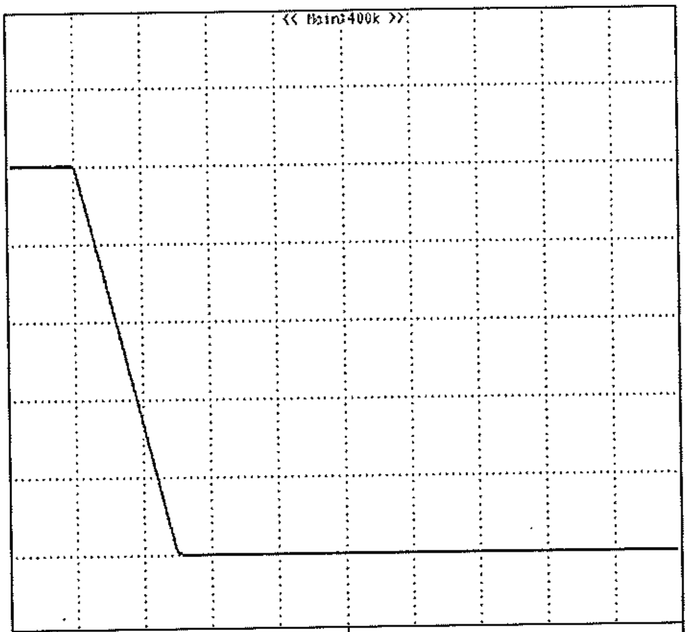


2.5 ON/OFF Output fall characteristics

Conditions: Vin: 100Vac
Vout: 100%
Iout: 0%
Iset= 105%
Ta = 25°C

C.V mode

Z100-8



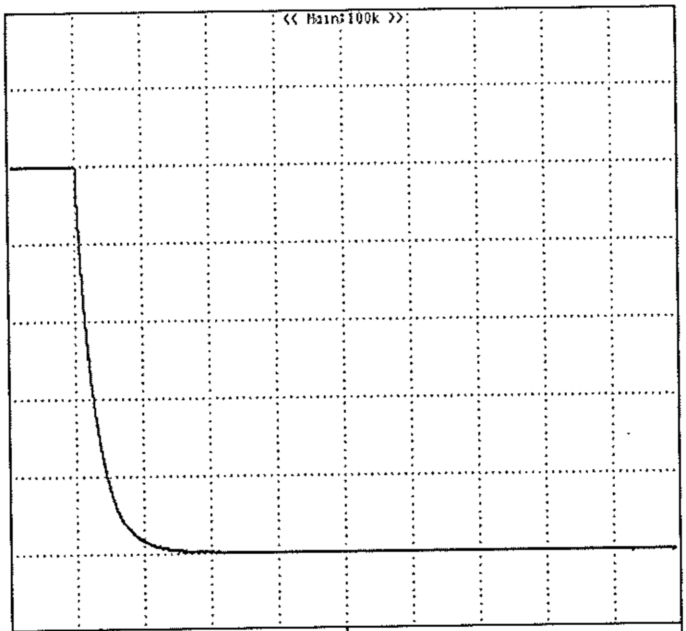
$20^{V}/_{DIV}$	$200^{ms}/_{DIV}$

2.5 ON/OFF Output fall characteristics

Conditions: Vin: 100Vac
Vout: 100%
Iout: 0%
Iset= 105%
Load: CR
Ta = 25°C

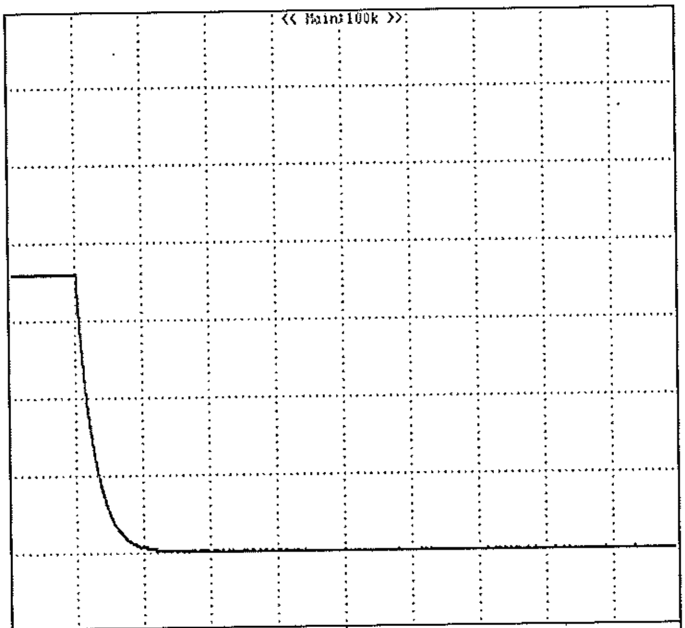
C.V mode

Z10-72



$2^V/_{DIV}$	$5^{ms}/_{DIV}$

Z36-24



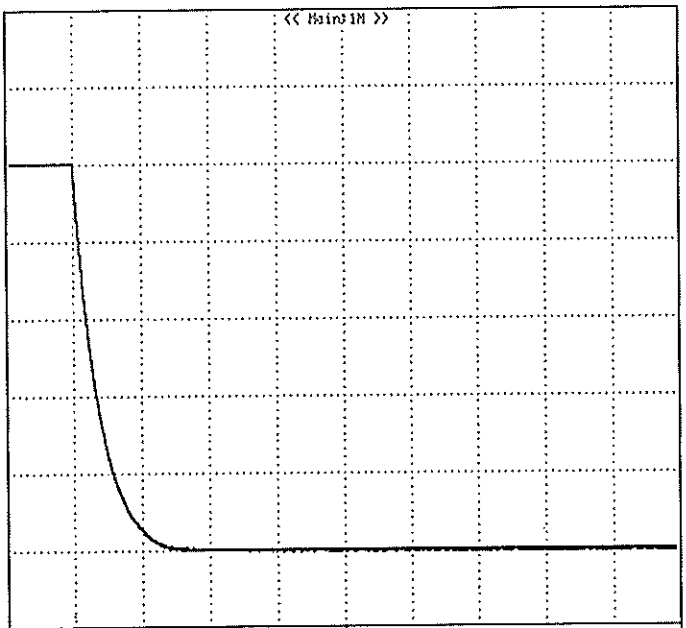
$10^V/_{DIV}$	$10^{ms}/_{DIV}$

2.5 ON/OFF Output fall characteristics

Conditions: Vin: 100Vac
Vout: 100%
Iout: 0%
Iset= 105%
Load: CR
Ta = 25°C

C.V mode

Z100-8



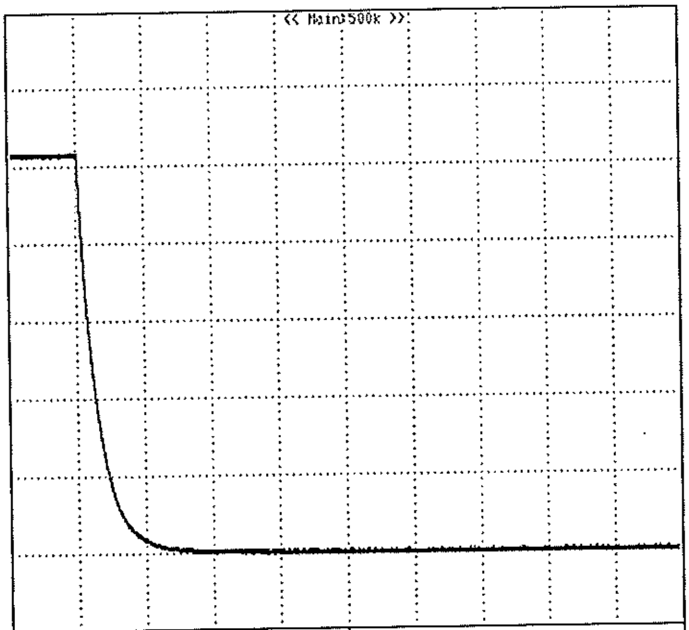
20 V/DIV	20 ms/DIV

2.5 ON/OFF Output fall characteristics

Conditions: Vin: 100Vac
Vout: 100%
Iout: 100%
Vset= 105%
Load: CR
Ta = 25°C

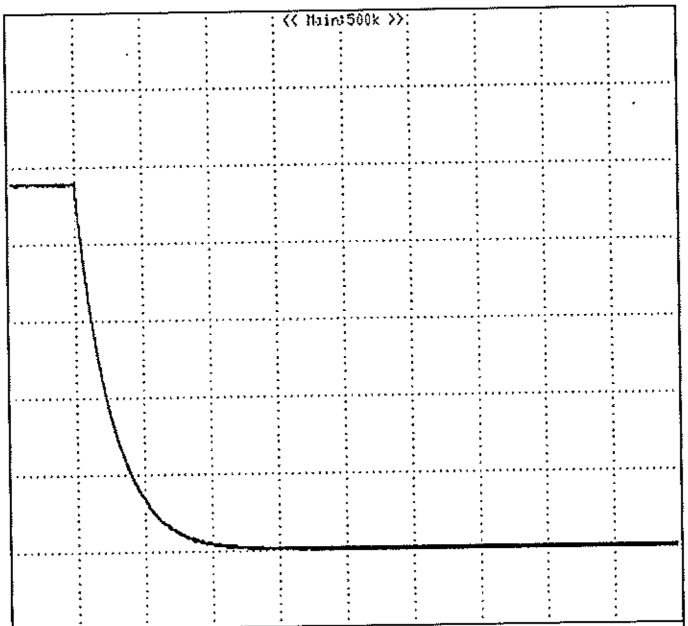
C.C mode

Z10-72



$14^{A}/_{DIV}$	$5^{ms}/_{DIV}$

Z36-24



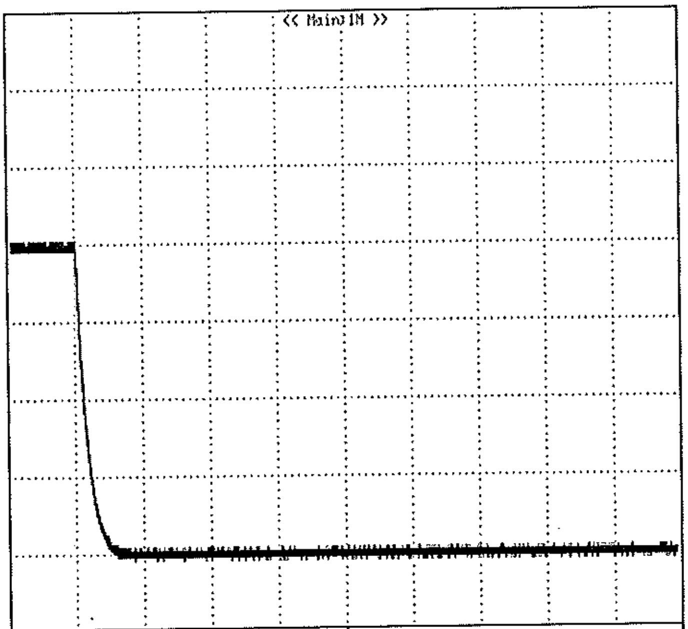
$5^{A}/_{DIV}$	$5^{ms}/_{DIV}$

2.5 ON/OFF Output fall characteristics

Conditions: Vin: 100Vac
Vout: 100%
Iout: 100%
Vset= 105%
Load: CR
Ta = 25°C

C.C mode

Z100-8



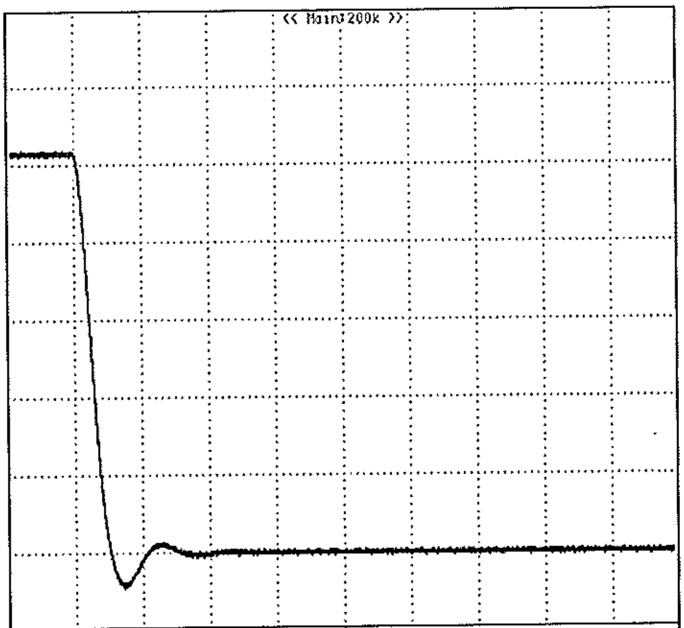
2A/DIV	50ms/DIV

2.5 ON/OFF Output fall characteristics

Conditions: Vin: 100Vac
Iout: 100%
Vset= 105%
shorted output
Ta = 25°C

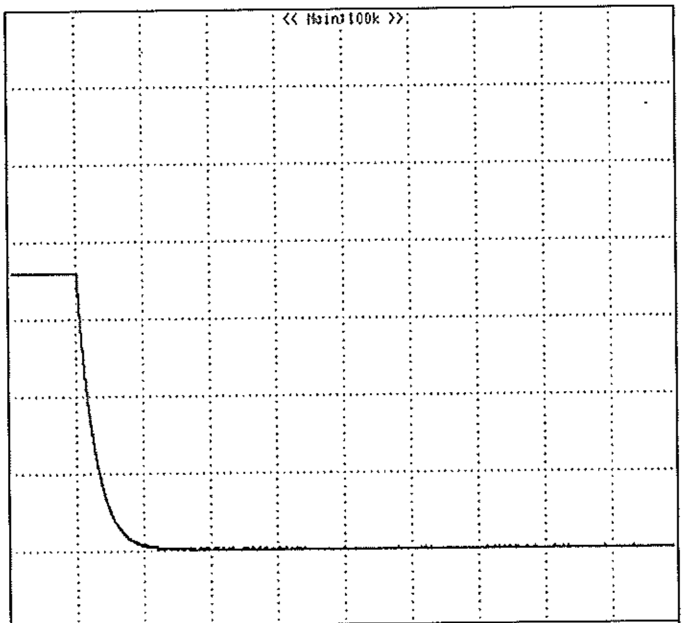
C.C mode

Z10-72



$14^{A}/_{DIV}$	$1^{ms}/_{DIV}$

Z36-24



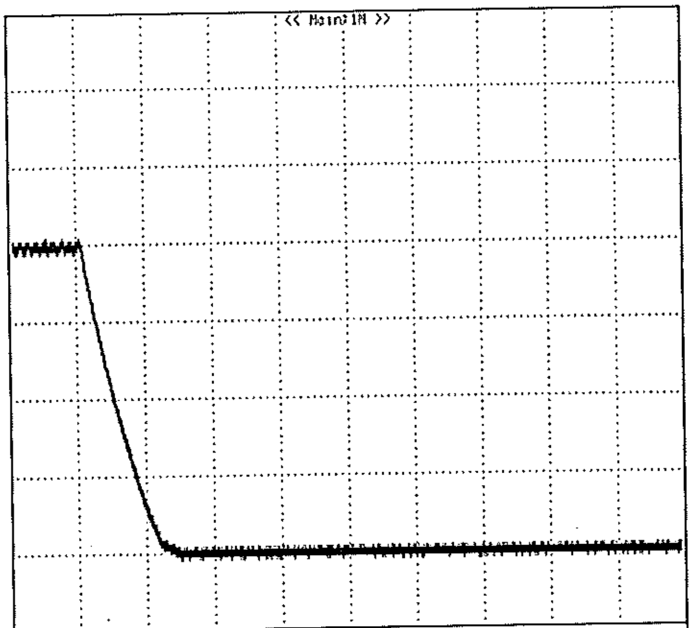
$5^{A}/_{DIV}$	$0.5^{ms}/_{DIV}$

2.5 ON/OFF Output fall characteristics

Conditions: Vin: 100Vac
Iout: 100%
Vset= 105%
shorted output
Ta = 25°C

C.C mode

Z100-8

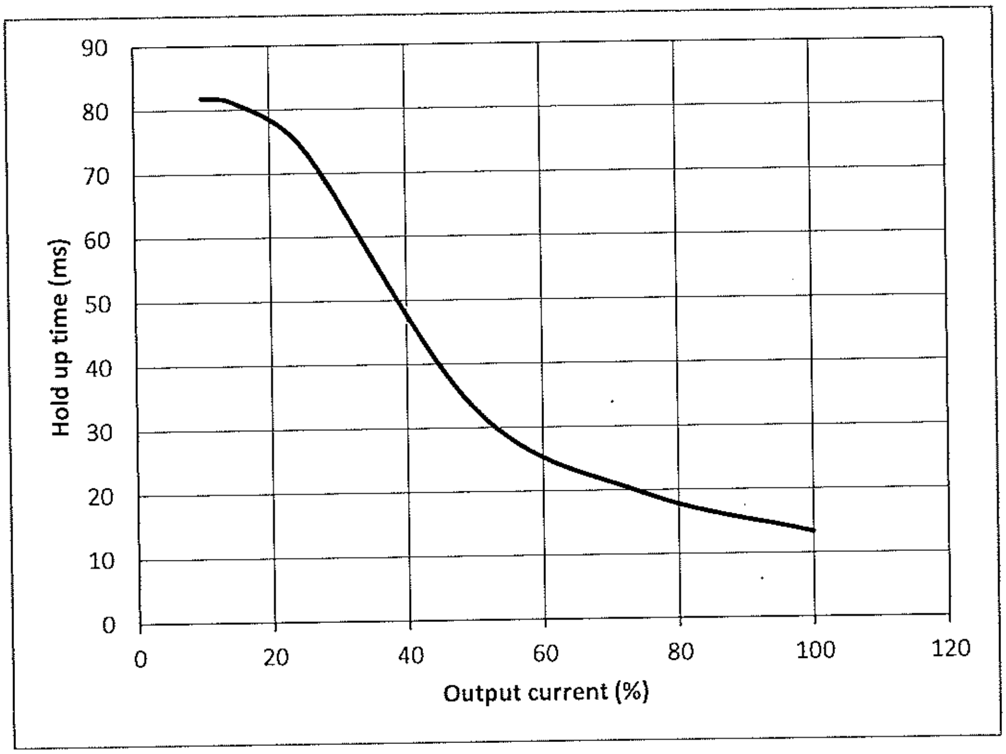


2 A/DIV	2 ms/DIV

2.6 Hold up time characteristics

Conditions: Vin: 100Vac
Vout: 100%
Ta = 25°C

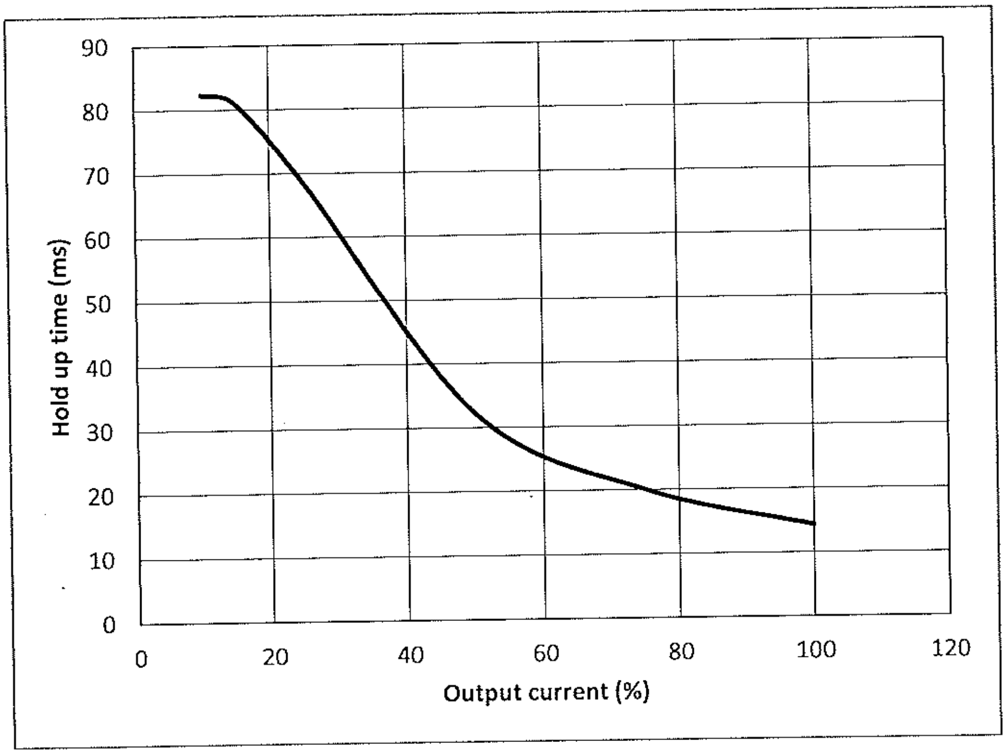
Z10-72



2.6 Hold up time characteristics

Conditions: Vin: 100Vac
Vout: 100%
Ta = 25°C

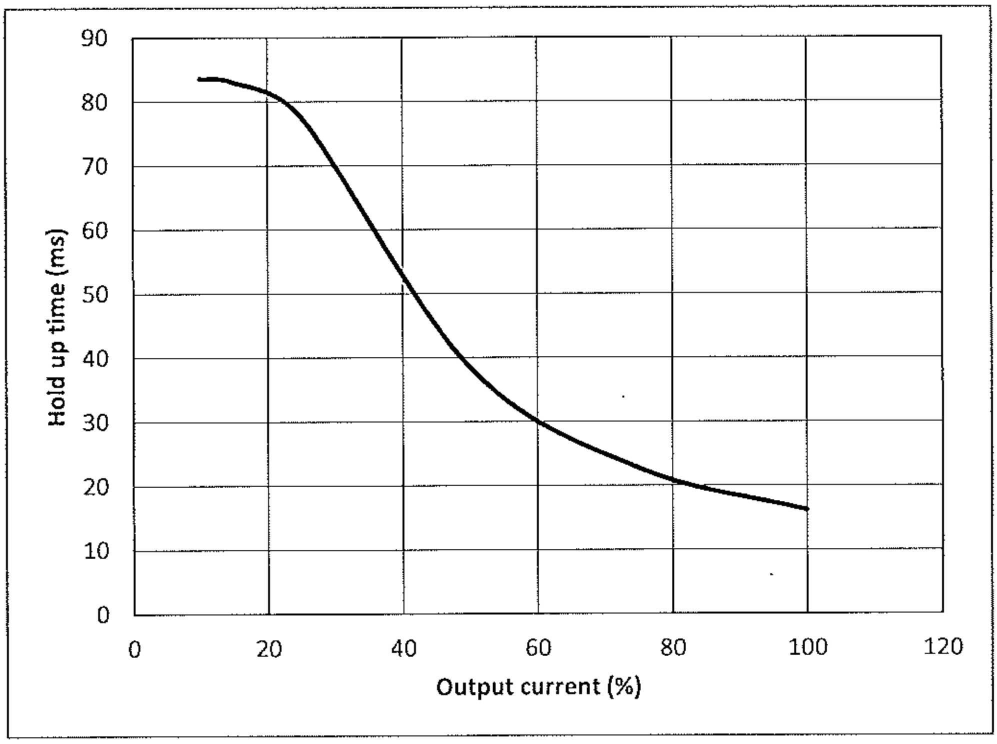
Z36-24



2.6 Hold up time characteristics

Conditions: Vin: 100Vac
Vout: 100%
Ta = 25°C

Z100-8

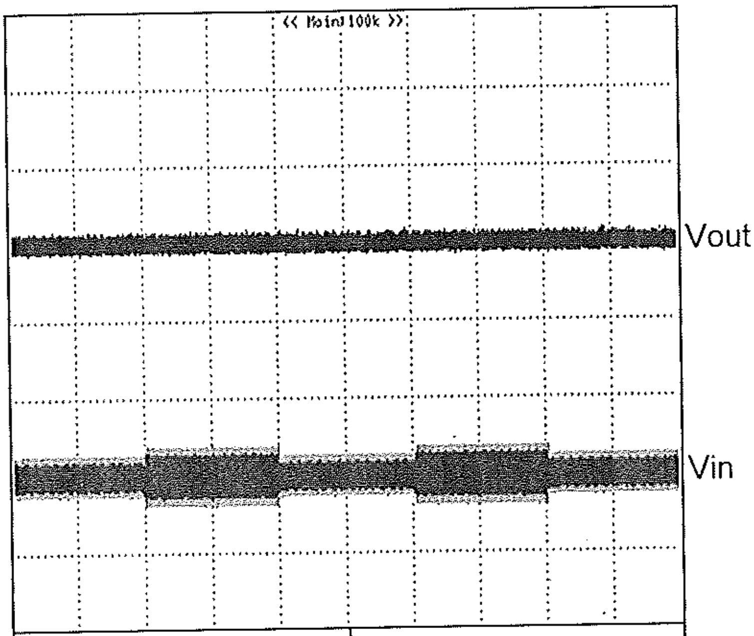


2.7 Dynamic line response characteristics

Conditions: Vin: 85↔132Vac
Vout: 100%
Iout: 100%
Ta = 25°C

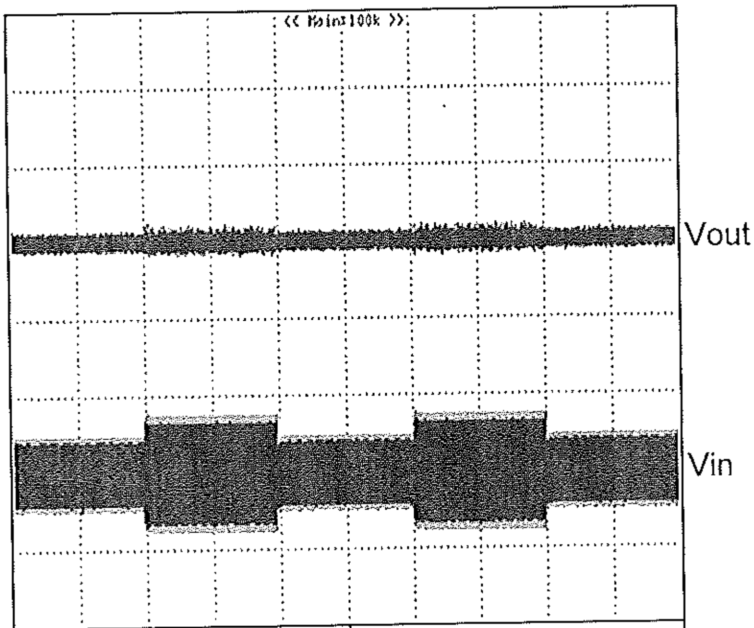
C.V mode

Z10-72



Vout: 20^{mv}/$_{DIV}$	500^{ms}/$_{DIV}$

Conditions: Vin: 170↔265Vac
Vout: 100%
Iout: 100%
Ta = 25°C



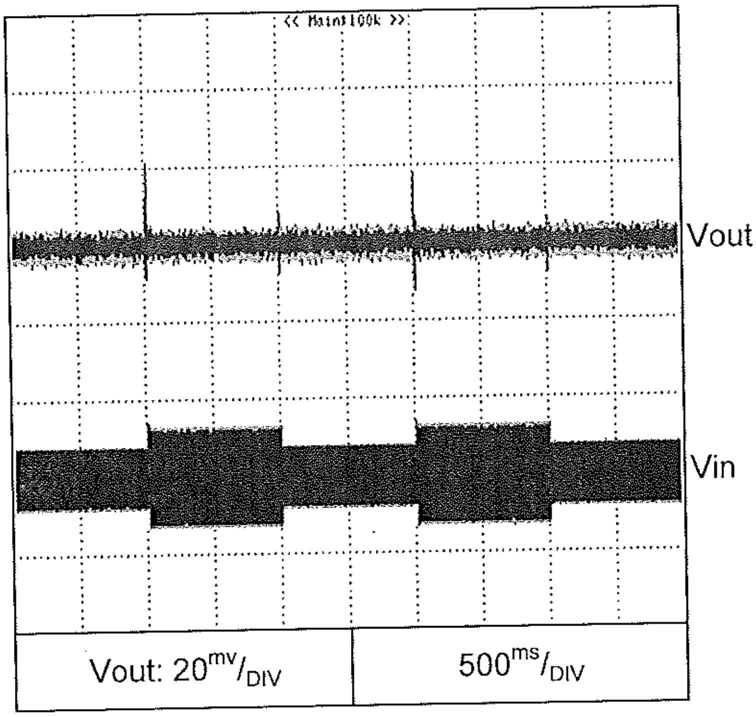
Vout: 20^{mv}/$_{DIV}$	500^{ms}/$_{DIV}$

2.7 Dynamic line response characteristics

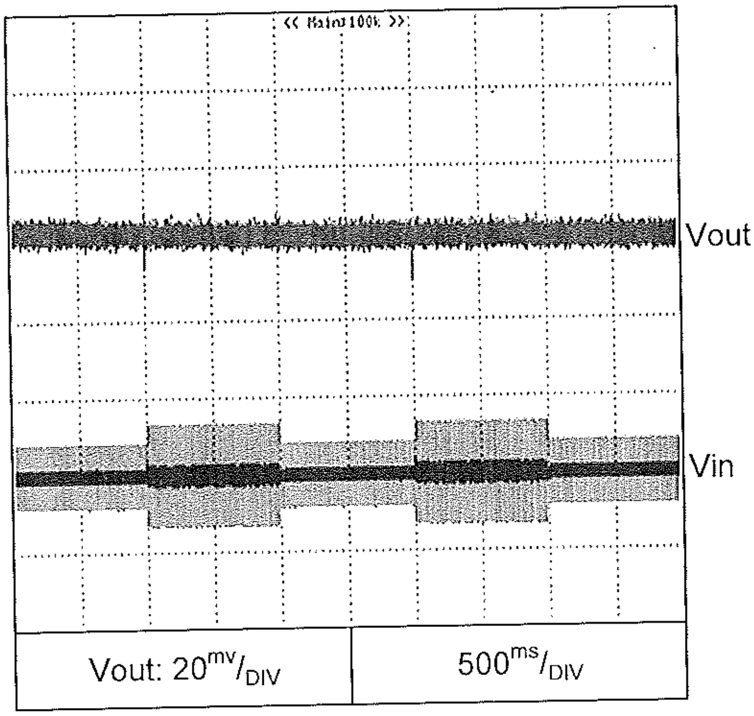
Conditions: Vin: 85↔132Vac
Vout: 100%
Iout: 100%
Ta = 25°C

C.V mode

Z36-24



Conditions: Vin: 170↔265Vac
Vout: 100%
Iout: 100%
Ta = 25°C

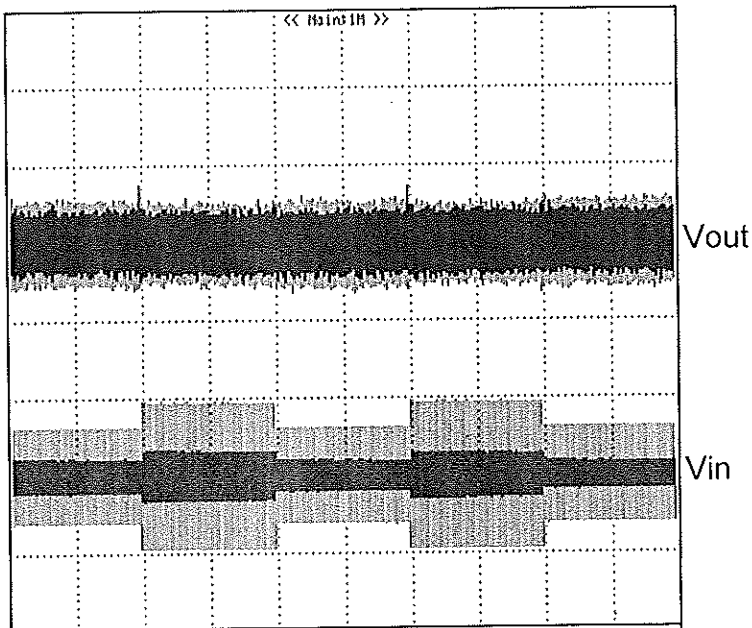


2.7 Dynamic line response characteristics

Conditions: Vin: 85↔132Vac
Vout: 100%
Iout: 100%
Ta = 25°C

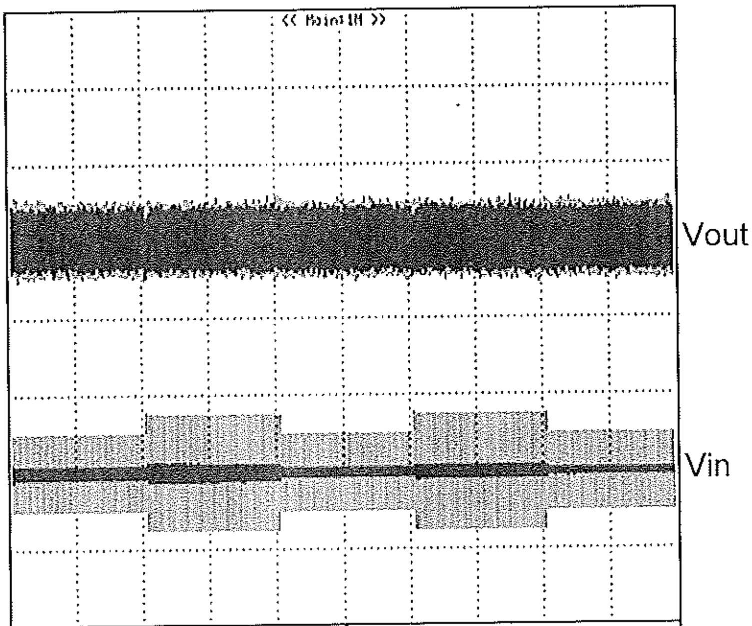
C.V mode

Z100-8



Vout: $20^{mv}/_{DIV}$	$500^{ms}/_{DIV}$

Conditions: Vin: 170↔265Vac
Vout: 100%
Iout: 100%
Ta = 25°C



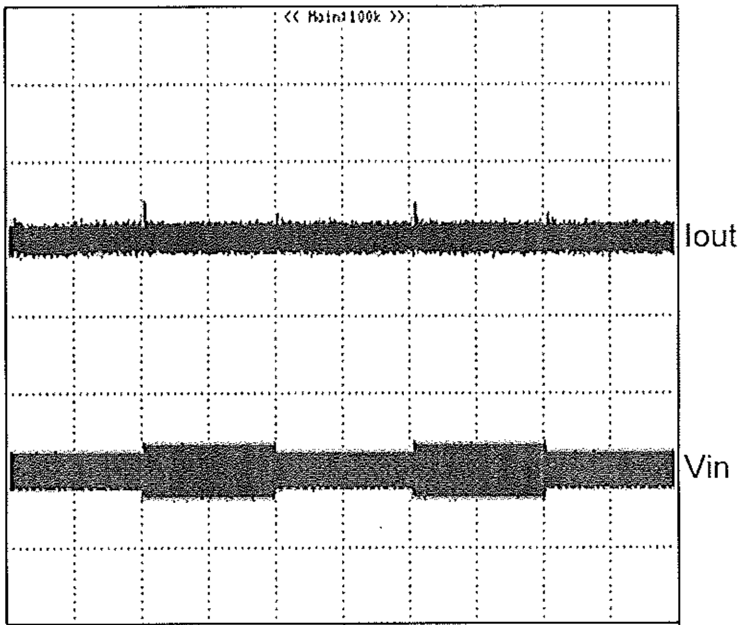
Vout: $20^{mv}/_{DIV}$	$500^{ms}/_{DIV}$

2.7 Dynamic line response characteristics

Conditions: Vin: 85↔132Vac
Vout: 100%
Iout: 100%
Ta = 25°C

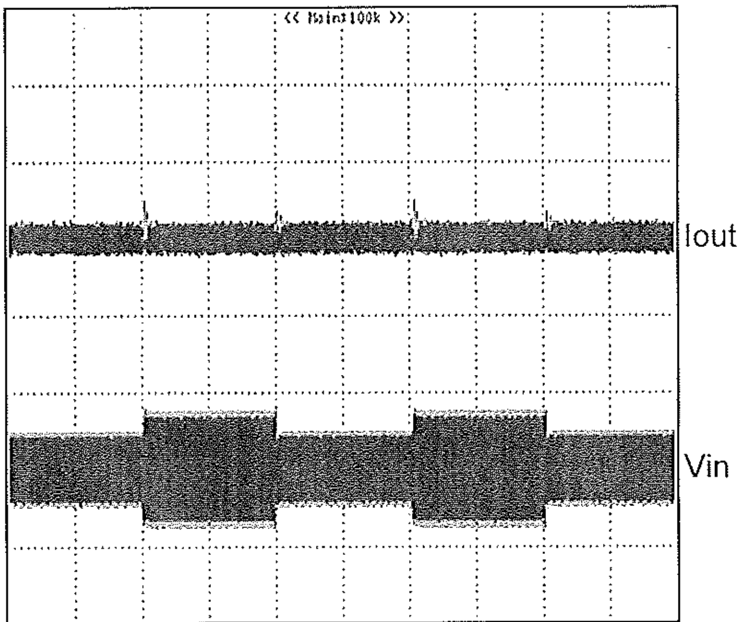
C.C mode

Z10-72



Iout: 0.7 A/DIV	500 ms/DIV

Conditions: Vin: 170↔265Vac
Vout: 100%
Iout: 100%
Ta = 25°C



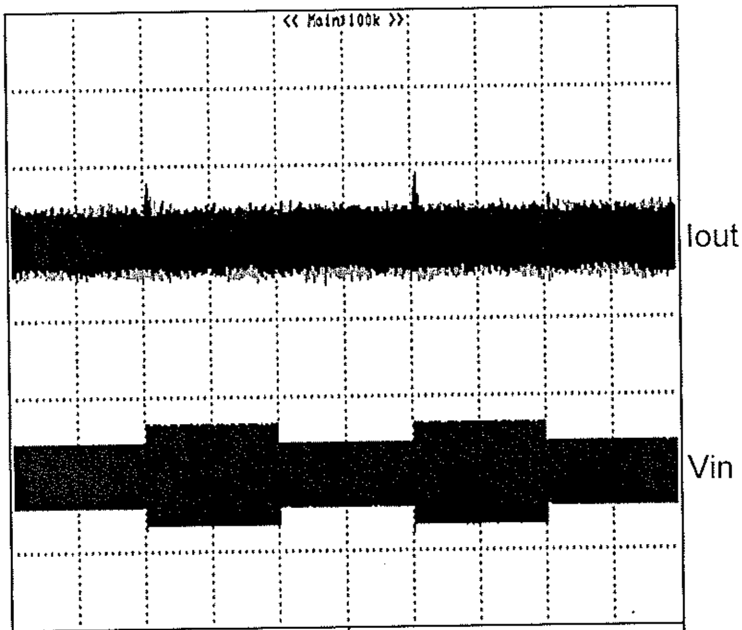
Iout: 0.7 A/DIV	500 ms/DIV

2.7 Dynamic line response characteristics

Conditions: Vin: 85↔132Vac
Vout: 100%
Iout: 100%
Ta = 25°C

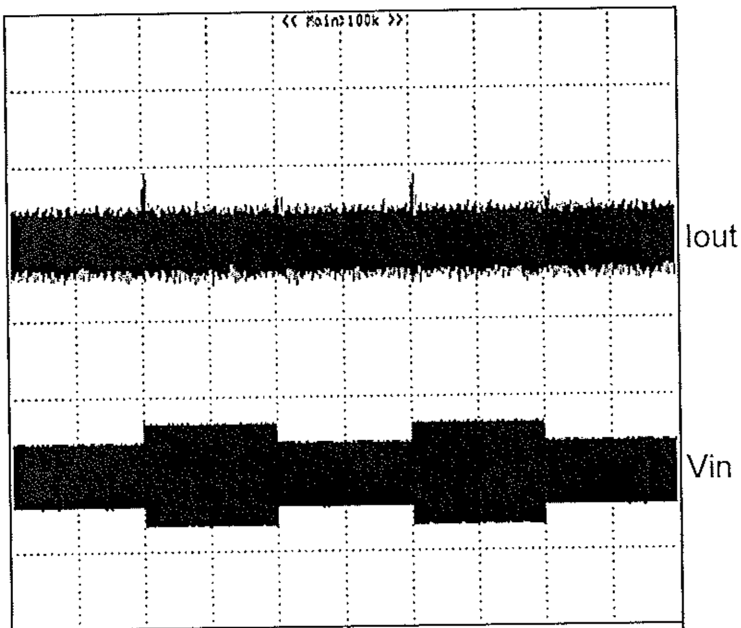
C.C mode

Z36-24



Iout: 50mA/DIV	500ms/DIV

Conditions: Vin: 170↔265Vac
Vout: 100%
Iout: 100%
Ta = 25°C



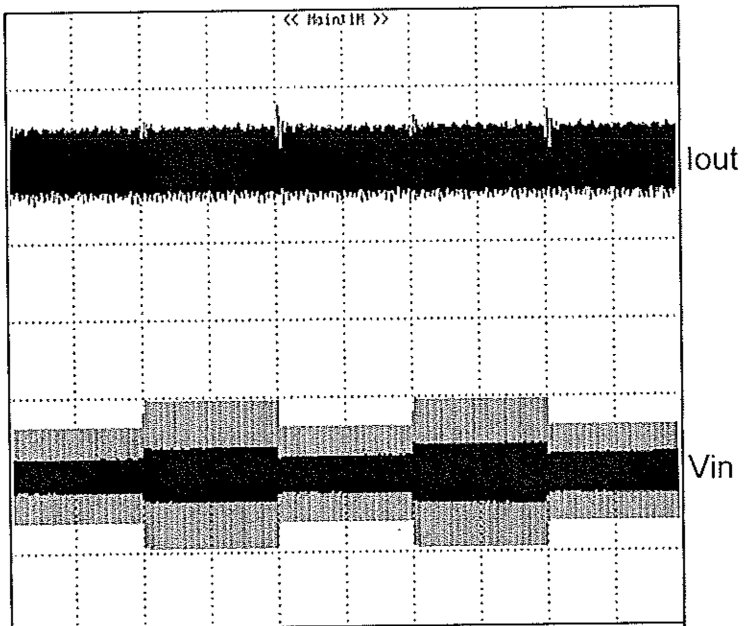
Iout: 50mA/DIV	500ms/DIV

2.7 Dynamic line response characteristics

Conditions: Vin: 85↔132Vac
Vout: 100%
Iout: 100%
Ta = 25°C

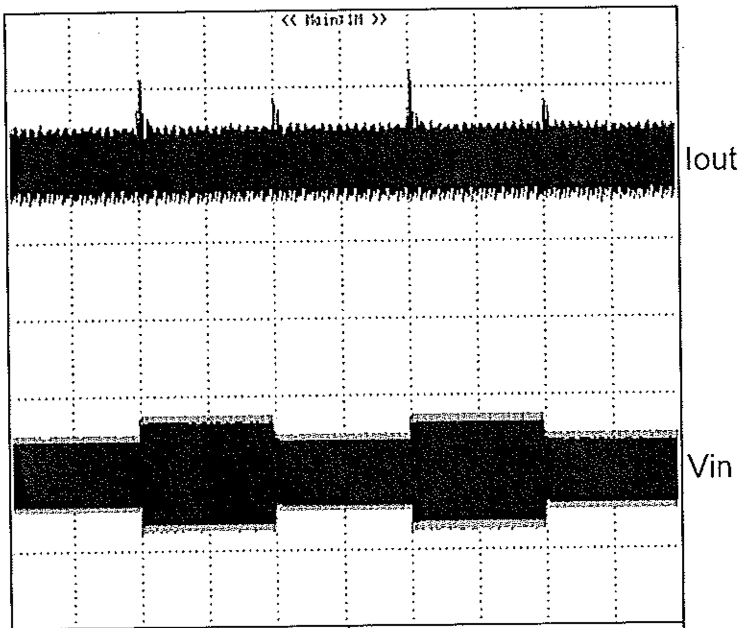
C.C mode

Z100-8



Iout: 20mA/DIV	500ms/DIV

Conditions: Vin: 170↔265Vac
Vout: 100%
Iout: 100%
Ta = 25°C



Iout: 20mA/DIV	500ms/DIV

2.8 Dynamic load response characteristics

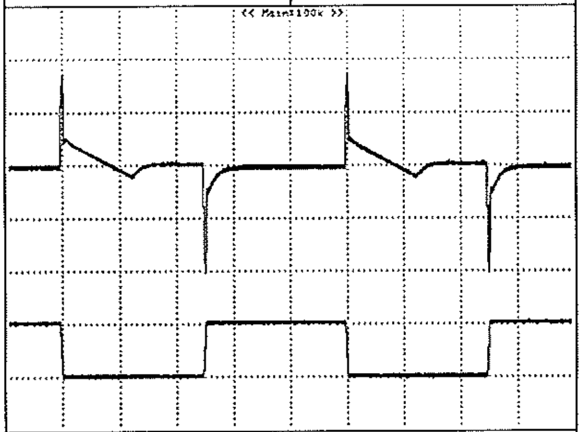
Conditions: Vin: 100Vac
Vout: 100%
Ta = 25°C

C.V mode

Load current: tr=tf=100us

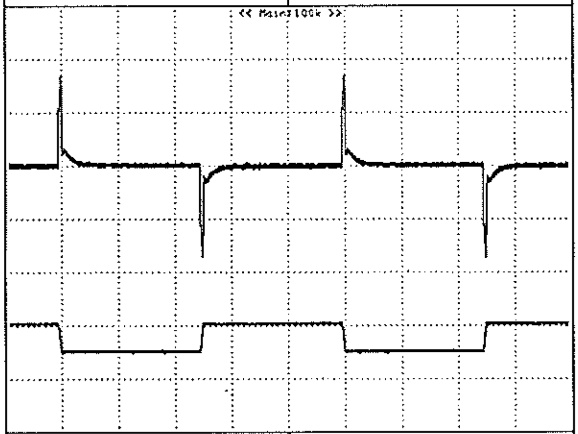
Z10-72

Iout:0%↔100%	f:100Hz



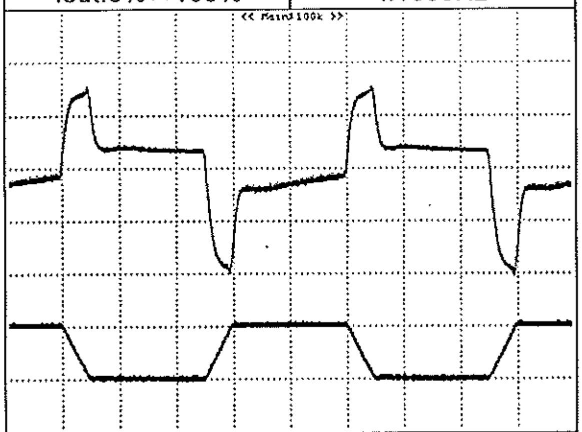
$0.2^{V}/_{DIV}$	$2^{ms}/_{DIV}$
3.46%	-4.06%

Iout:50%↔100%	f:100Hz



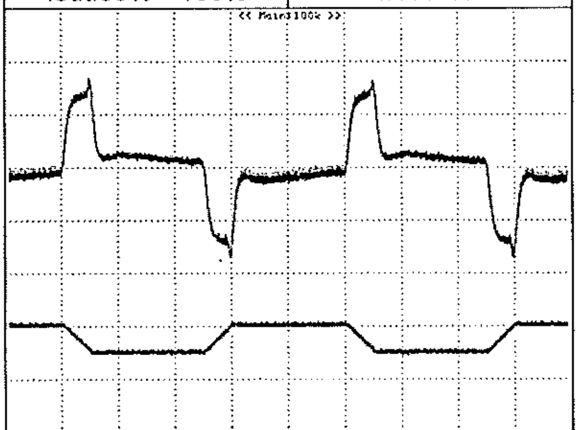
$0.1^{V}/_{DIV}$	$2^{ms}/_{DIV}$
1.70%	-1.73%

Iout:0%↔100%	f:1000Hz



$0.2^{V}/_{DIV}$	$200^{us}/_{DIV}$
3.09%	-4.09%

Iout:50%↔100%	f:1000Hz



$0.1^{V}/_{DIV}$	$200^{us}/_{DIV}$
1.68%	-1.70%

2.8 Dynamic load response characteristics

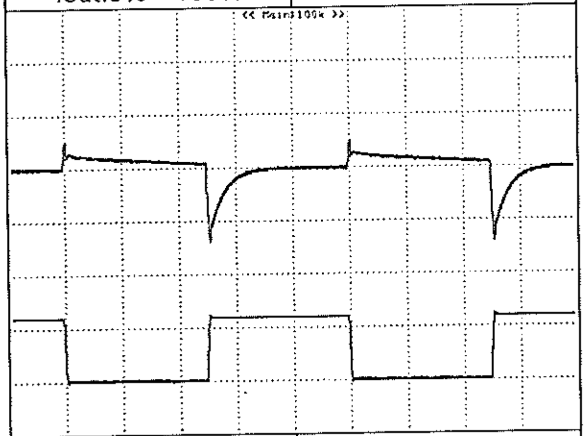
Conditions: Vin: 100Vac
Vout: 100%
Ta = 25°C

C.V mode

Load current: tr=tf=100us

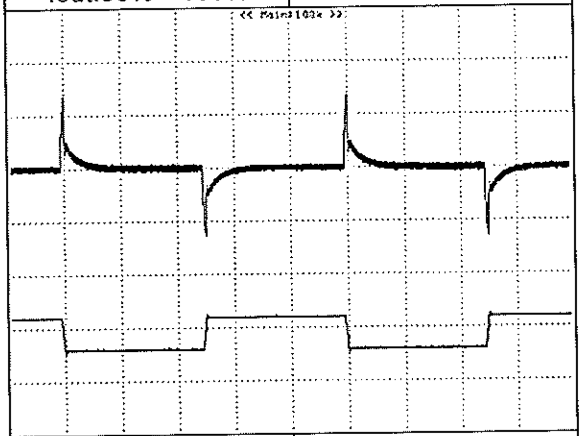
Z36-24

Iout:0%↔100%	f:100Hz



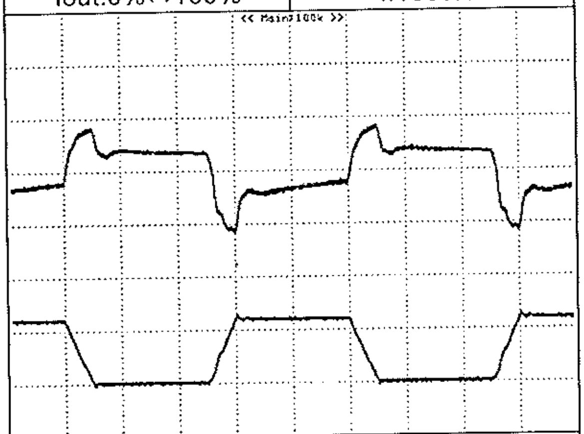
$1^{V}/_{DIV}$	$2^{ms}/_{DIV}$
1.41%	-3.90%

Iout:50%↔100%	f:100Hz



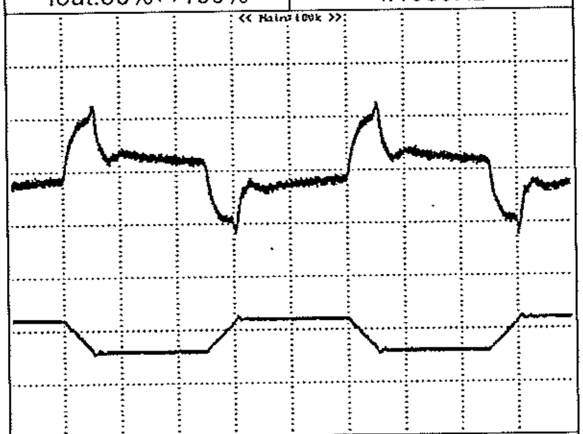
$0.2^{V}/_{DIV}$	$2^{ms}/_{DIV}$
0.76%	-0.72%

Iout:0%↔100%	f:1000Hz



$0.5^{V}/_{DIV}$	$200^{us}/_{DIV}$
1.17%	-1.63%

Iout:50%↔100%	f:1000Hz



$0.2^{V}/_{DIV}$	$200^{us}/_{DIV}$
0.70%	-0.68%

2.8 Dynamic load response characteristics

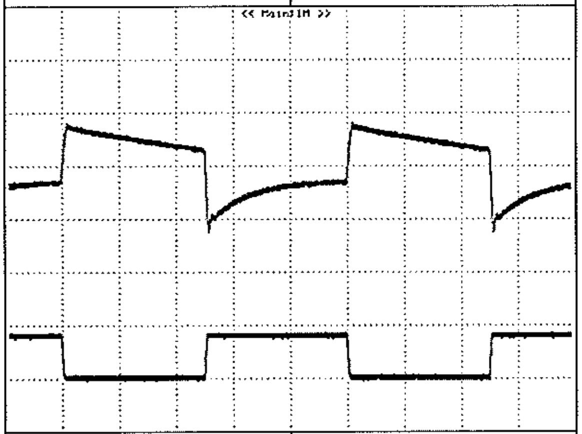
Conditions: Vin: 100Vac
Vout: 100%
Ta = 25°C

C.V mode

Load current: tr=tf=100us

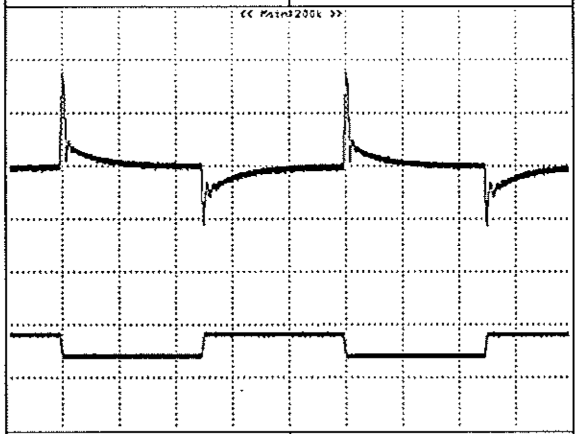
Z100-8

Iout:0%↔100%	f:100Hz



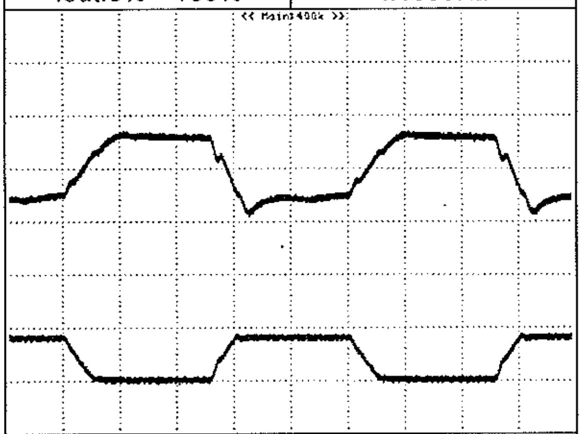
$1^{V}/_{DIV}$	$2^{ms}/_{DIV}$
0.80%	-1.26%

Iout:50%↔100%	f:100Hz



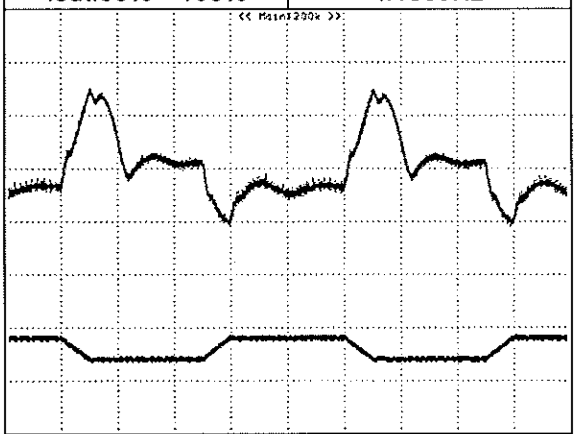
$0.2^{V}/_{DIV}$	$2^{ms}/_{DIV}$
0.35%	-0.22%

Iout:0%↔100%	f:1000Hz



$1^{V}/_{DIV}$	$200^{us}/_{DIV}$
0.71%	-0.90%

Iout:50%↔100%	f:1000Hz



$0.2^{V}/_{DIV}$	$200^{us}/_{DIV}$
0.30%	-0.22%

2.8 Dynamic load response characteristics

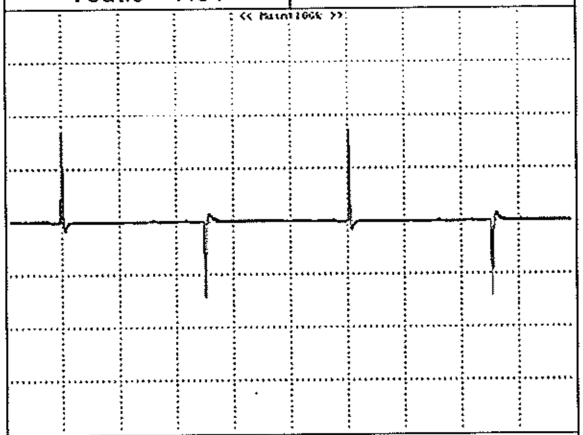
Conditions: Vin: 100Vac
Ta = 25°C

C.C mode

Z10-72

Io=72A

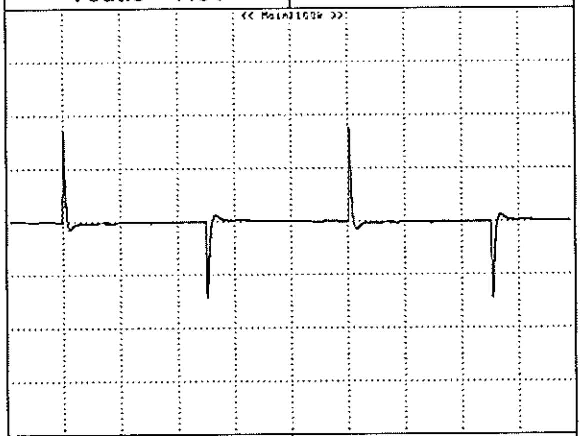
Vout:9↔7.5V	f:10Hz



$7^{A}/_{DIV}$	$20^{ms}/_{DIV}$
16.53%	-13.71%

Io=36A

Vout:9↔7.5V	f:10Hz

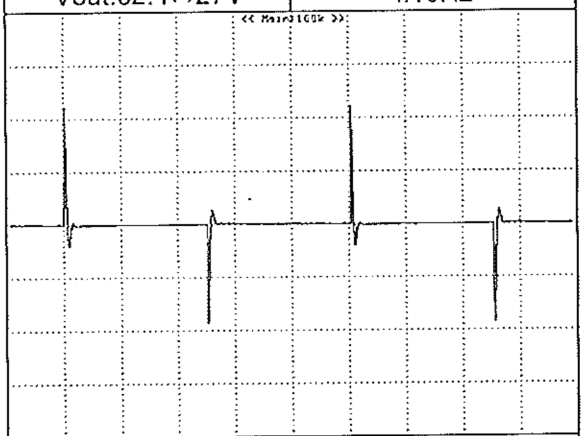


$3.5^{A}/_{DIV}$	$20^{ms}/_{DIV}$
8.46%	-7.00%

Z36-24

Io=24A

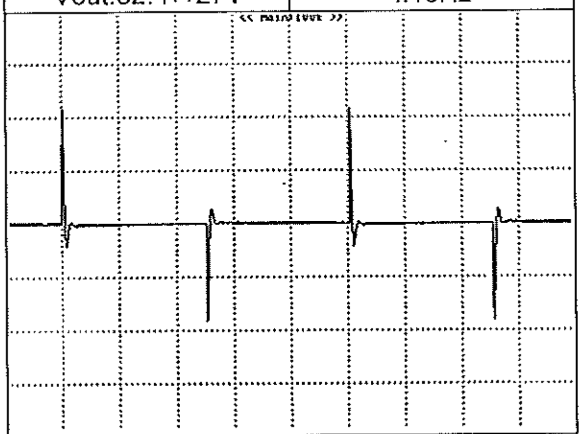
Vout:32.4↔27V	f:10Hz



$2^{A}/_{DIV}$	$20^{ms}/_{DIV}$
18.46%	-15.42%

Io=12A

Vout:32.4↔27V	f:10Hz



$1^{A}/_{DIV}$	$20^{ms}/_{DIV}$
9.08%	-7.58%

2.8 Dynamic load response characteristics

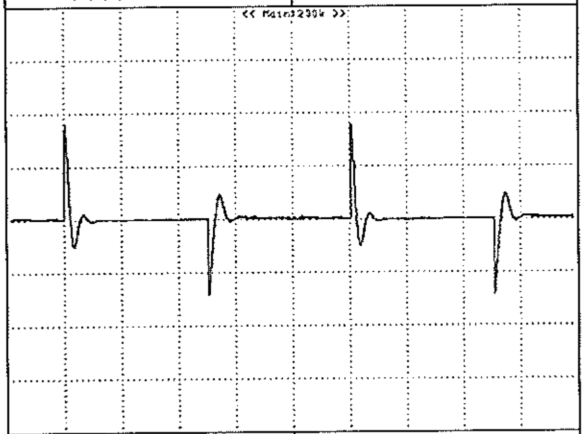
Conditions: Vin: 100Vac
Ta = 25°C

C.C mode

Z100-8

Io=8A

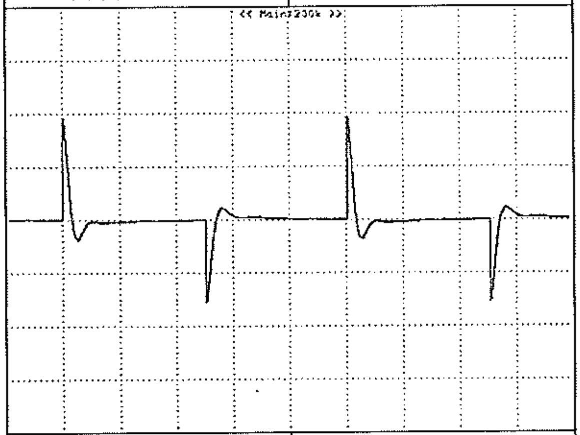
Vout:90↔75V	f:10Hz



$1^{A}/_{DIV}$	$20^{ms}/_{DIV}$
22.31%	-17.86%

Io=4A

Vout:90↔75V	f:10Hz



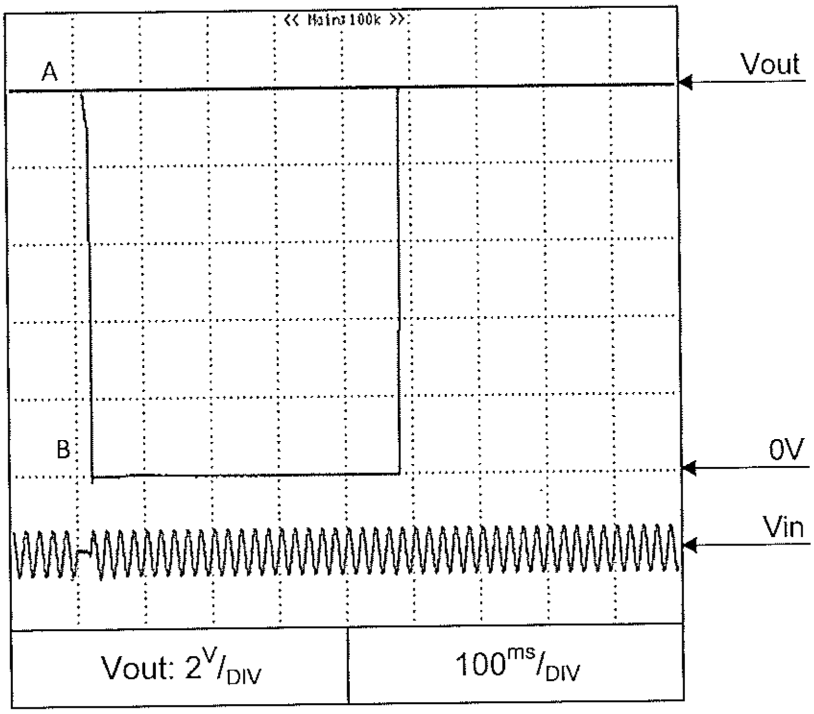
$0.5^{A}/_{DIV}$	$20^{ms}/_{DIV}$
11.96%	-9.59%

2.9 Response to brown out characteristics

Conditions: Vin: 100Vac
Vout: 100%
Iout: 100%
Ta = 25°C

C.V mode

Z10-72



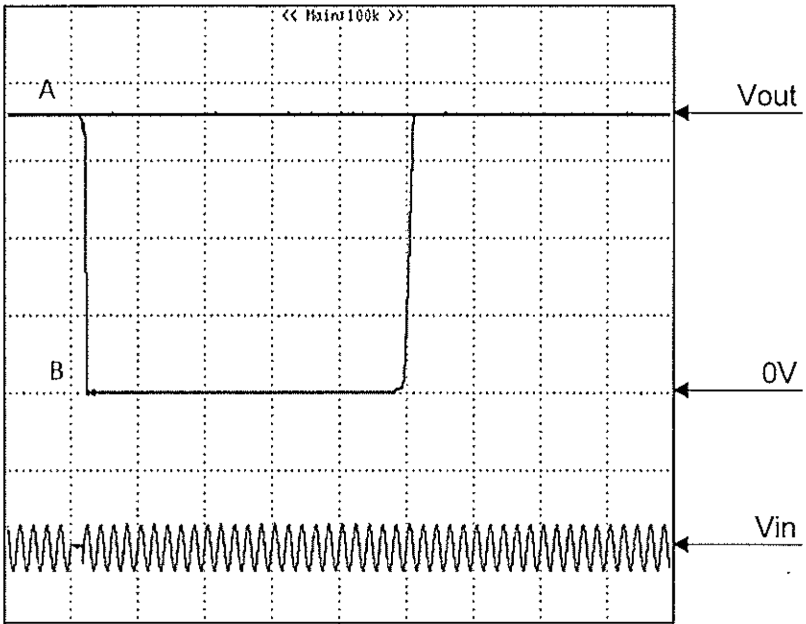
Brown-out time
A-12mS
B-13mS

2.9 Response to brown out characteristics

Conditions: Vin: 100Vac
Vout: 100%
Iout: 100%
Ta = 25°C

C.V mode

Z36-24



Vout: 10 V/DIV	100 ms/DIV

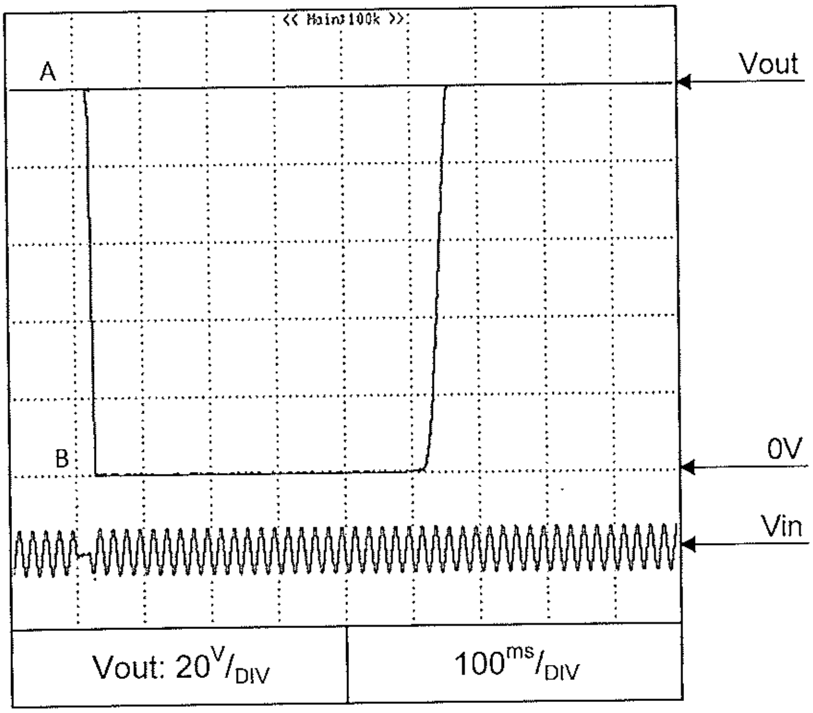
Brown-out time
A-16mS
B-17mS

2.9 Response to brown out characteristics

Conditions: Vin: 100Vac
Vout: 100%
Iout: 100%
Ta = 25°C

C.V mode

Z100-8



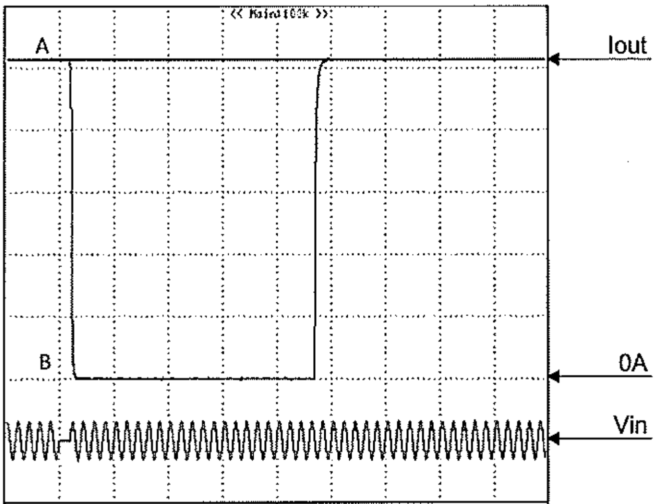
Brown-out time
A-16mS
B-19mS

2.9 Response to brown out characteristics

C.C mode

Conditions: Vin: 100Vac
Vout: 100%
Iout: 100%
Ta = 25°C

Z10-72



Iout: $14^{A}/_{DIV}$	$100^{ms}/_{DIV}$

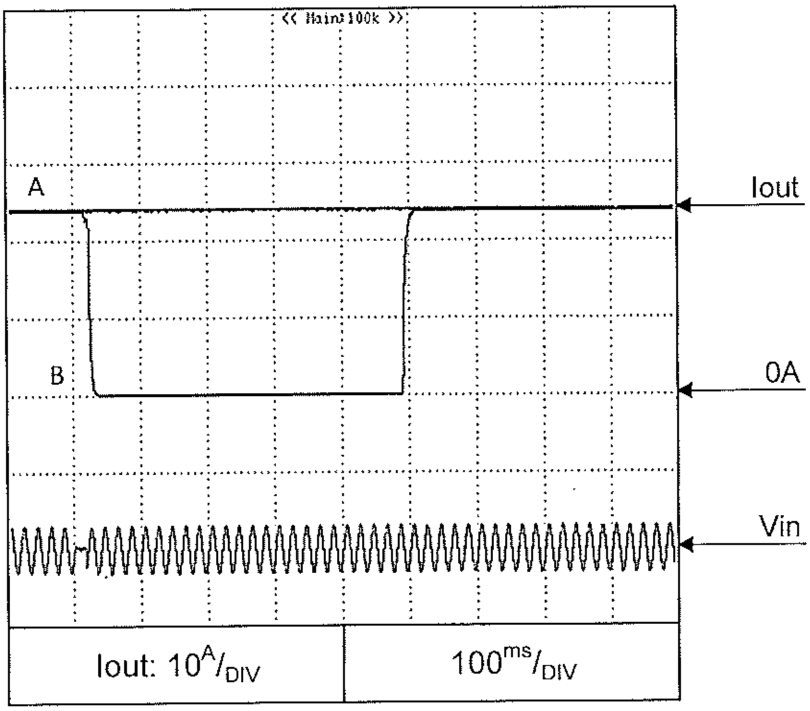
<u>Brown-out time</u>
A-14mS
B-20mS

2.9 Response to brown out characteristics

Conditions: Vin: 100Vac
Vout: 100%
Iout: 100%
Ta = 25°C

C.C mode

Z36-24



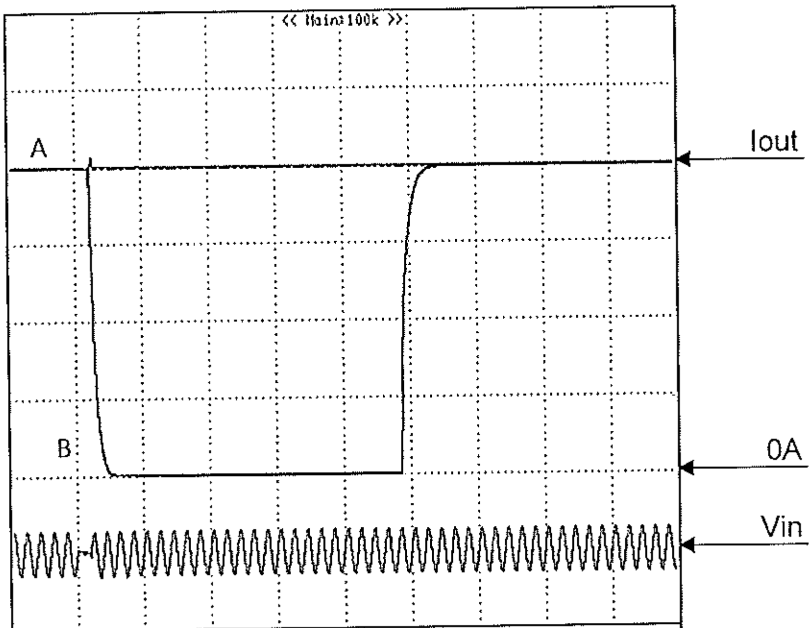
Brown-out time
A-16mS
B-17mS

2.9 Response to brown out characteristics

Conditions: Vin: 100Vac
Vout: 100%
Iout: 100%
Ta = 25°C

C.C mode

Z100-8



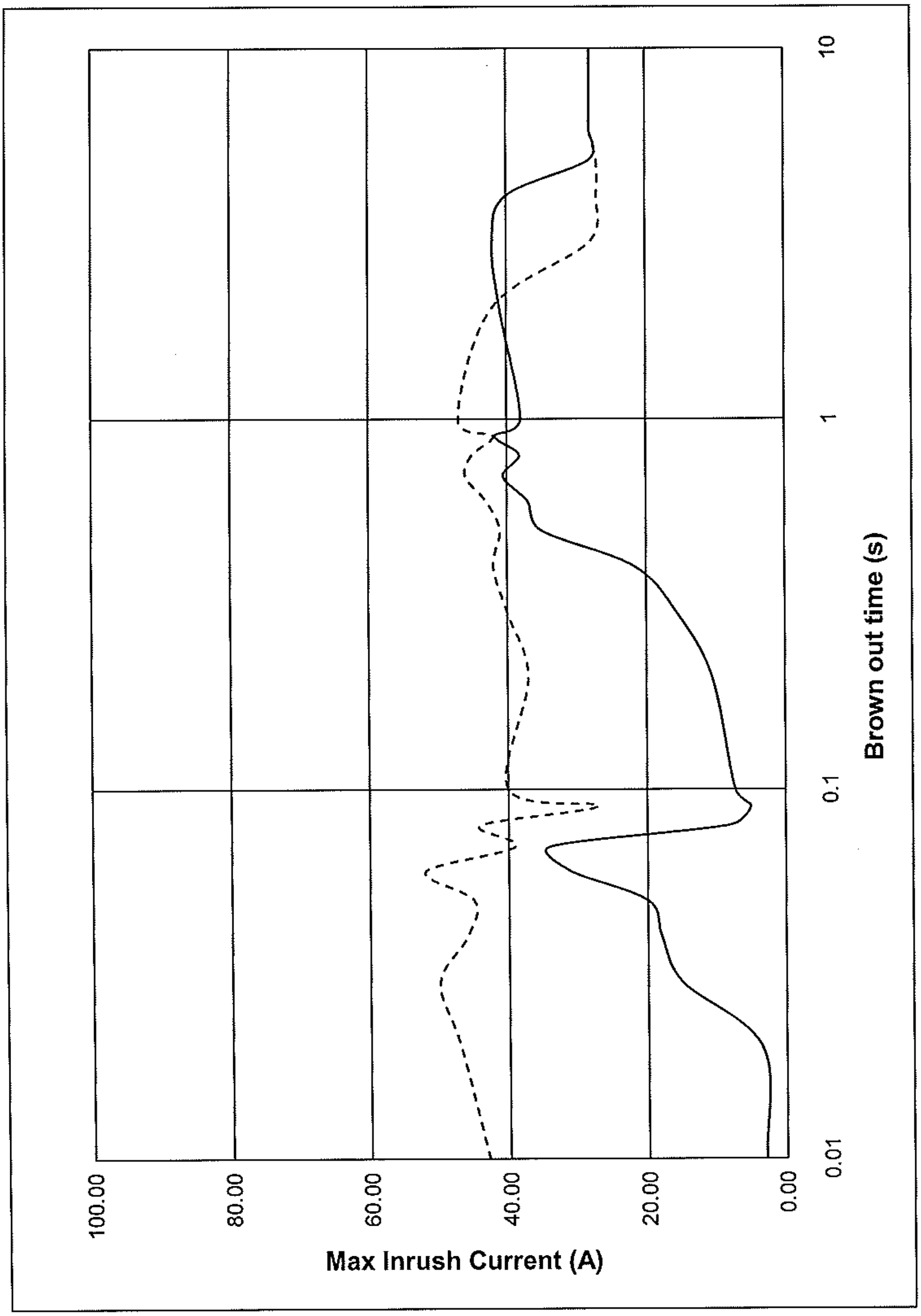
Iout: 2A/DIV	100ms/DIV

Brown-out time
A-16mS
B-19mS

2.10 Inrush current characteristics during line brown outs

Conditions: Vin: 100Vac
Vout: 100%
Iout: 0%
Iout: 100%
Ta = 25°C

Z10-72

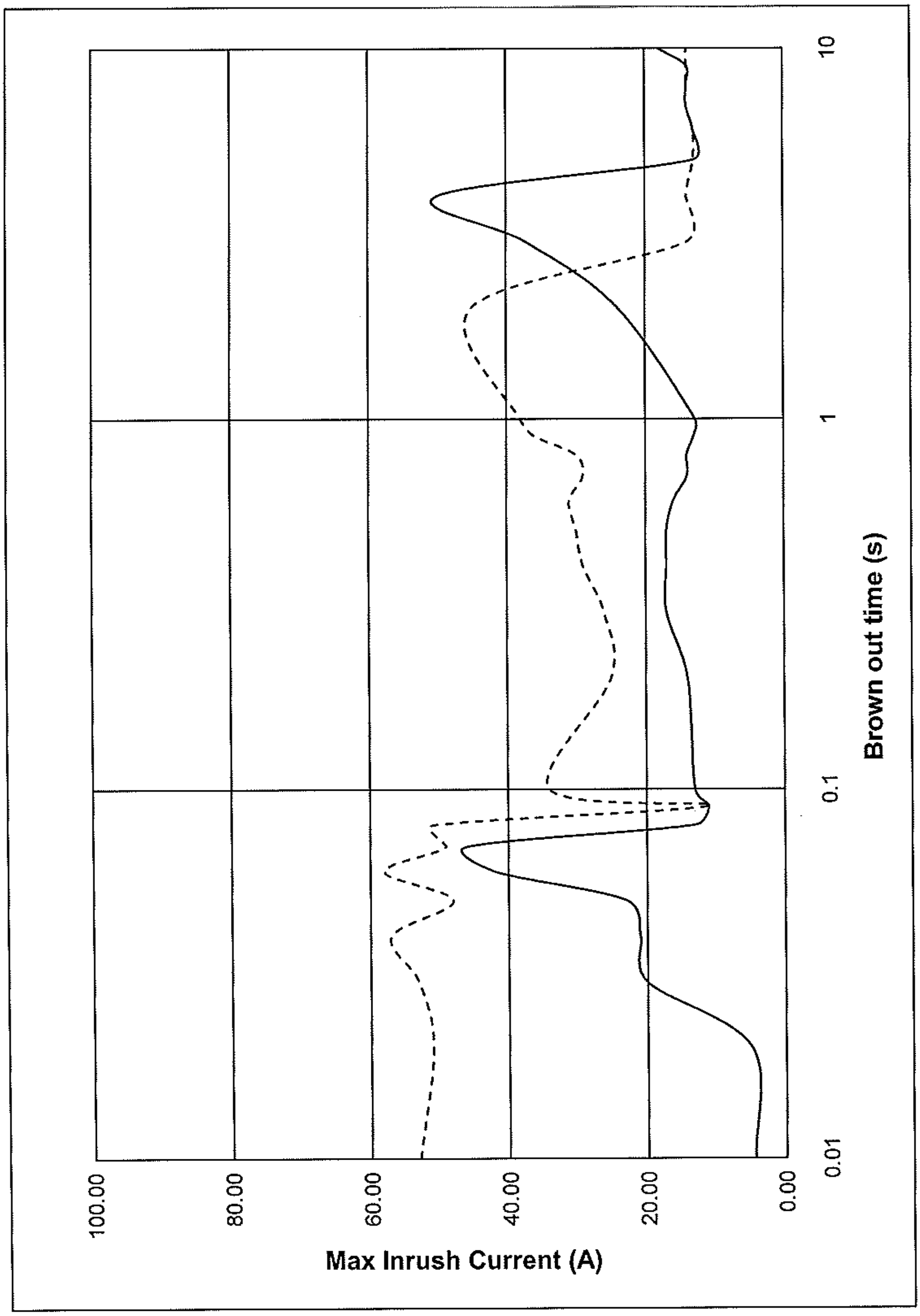


2.10 Inrush current characteristics during line brown outs

Conditions: Vin: 200Vac
Vout: 100%
Iout: 0% ------------
Iout: 100% ————

Ta = 25°C

Z10-72



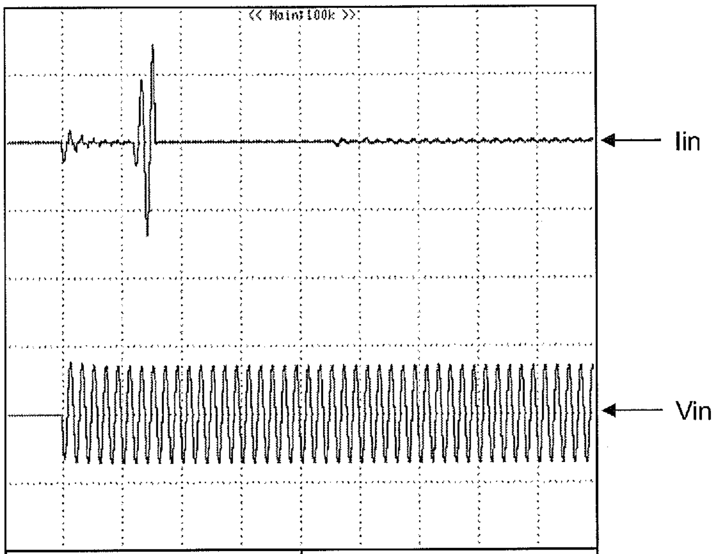
2.11 Inrush current waveform

Conditions: Vin: 100Vac
Vout: 100%
Iout: 100%
Ta = 25°C

Z10-72

Switch on phase angle of input AC voltage

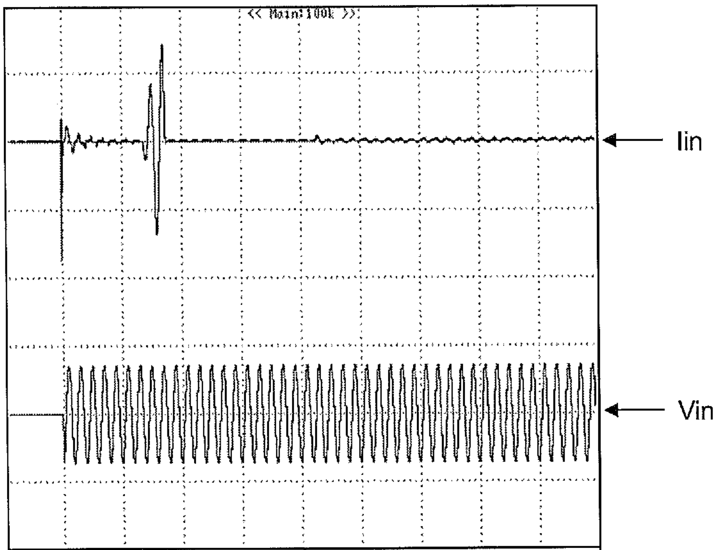
Φ = 0°



$20^{A}/_{DIV}$	$100^{ms}/_{DIV}$

Switch on phase angle of input AC voltage

Φ = 90°



$20^{A}/_{DIV}$	$100^{ms}/_{DIV}$

* Inrush current more than 30A is charge current into input film capacitor for EMI.
This pulse width is less than 200usec.

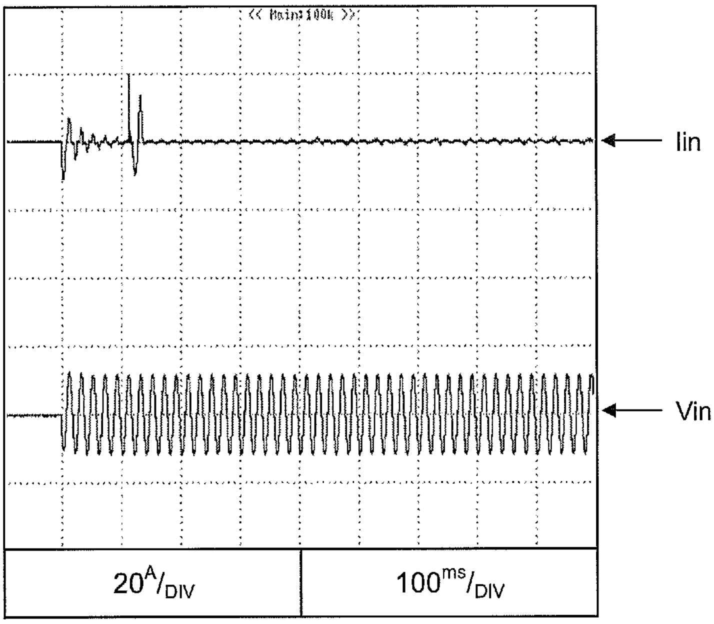
2.11 Inrush current waveform

Conditions: Vin: 200Vac
Vout: 100%
Iout: 100%
Ta = 25°C

Z10-72

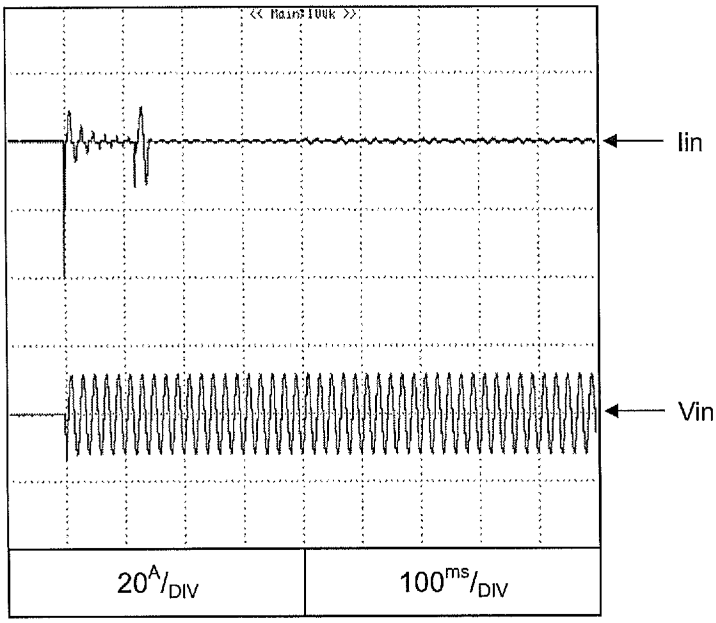
Switch on phase angle of input AC voltage

Φ = 0°



Switch on phase angle of input AC voltage

Φ = 90°



* Inrush current more than 30A is charge current into input film capacitor for EMI.
This pulse width is less than 200usec.

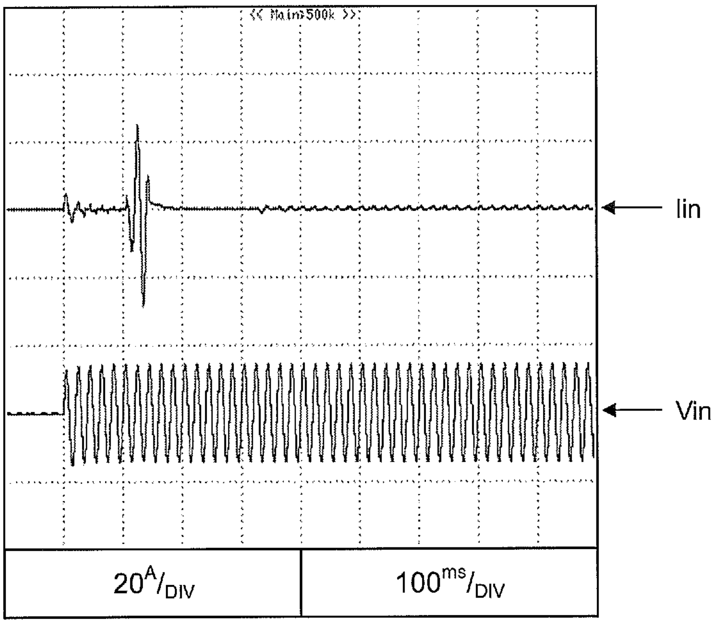
2.11 Inrush current waveform

Conditions: Vin: 100Vac
Vout: 100%
Iout: 100%
Ta = 25°C

Z100-8

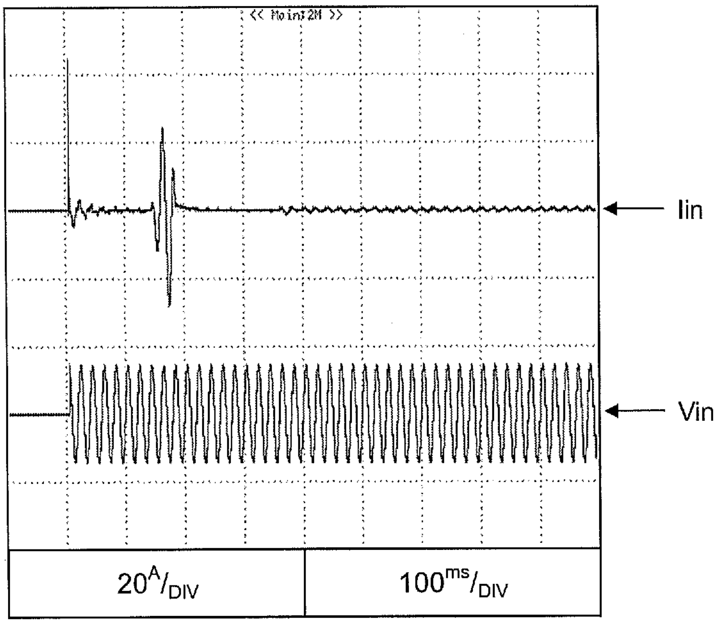
Switch on phase angle of input AC voltage

Φ = 0°



Switch on phase angle of input AC voltage

Φ = 90°



* Inrush current more than 30A is charge current into input film capacitor for EMI.
This pulse width is less than 200usec.

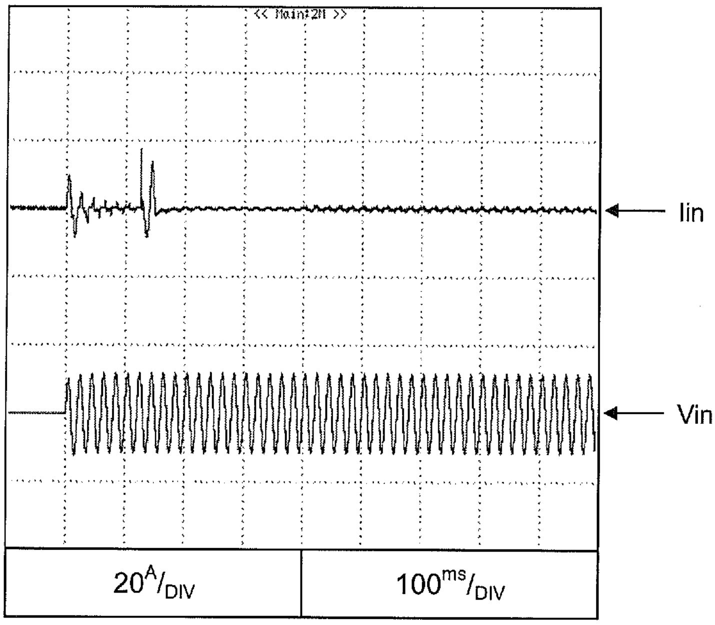
2.11 Inrush current waveform

Conditions: Vin: 200Vac
Vout: 100%
Iout: 100%
Ta = 25°C

Z100-8

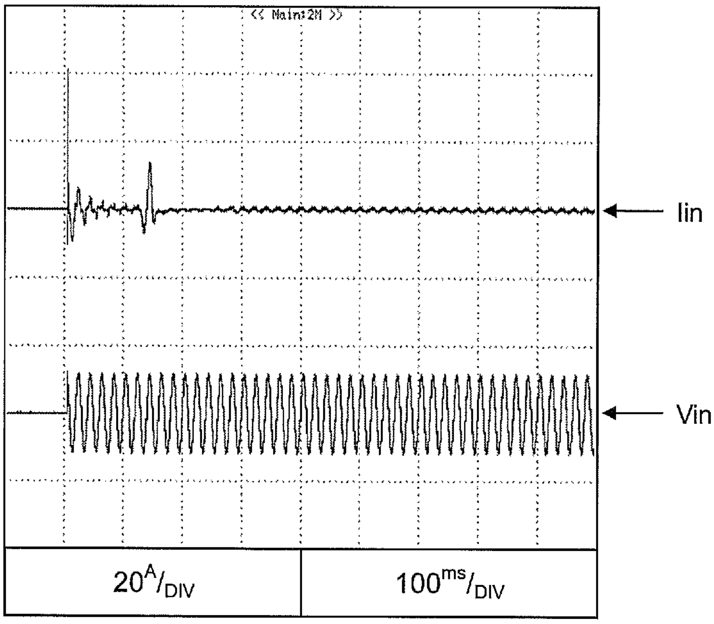
Switch on phase angle of input AC voltage

Φ = 0°



Switch on phase angle of input AC voltage

Φ = 90°

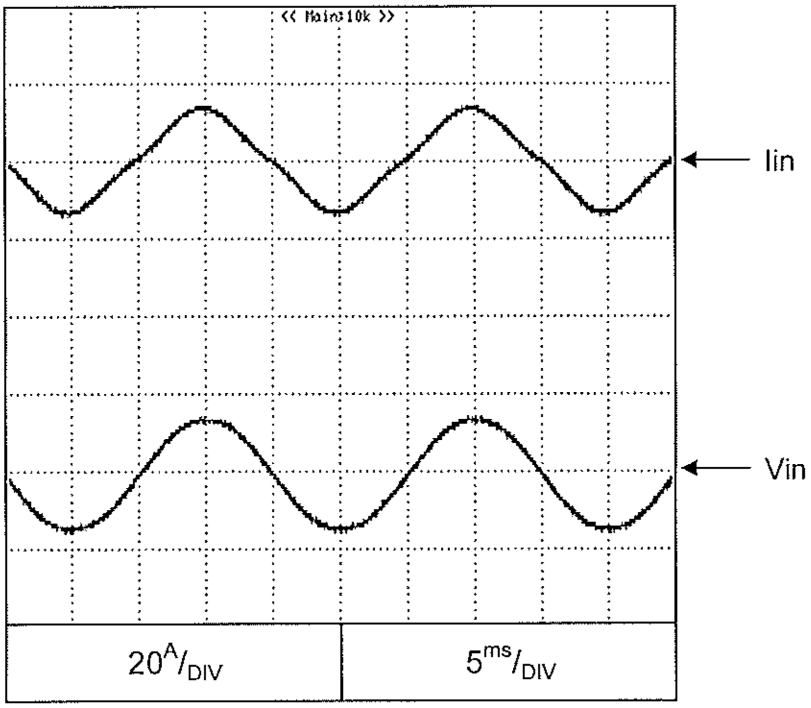


* Inrush current more than 30A is charge current into input film capacitor for EMI.
This pulse width is less than 200usec.

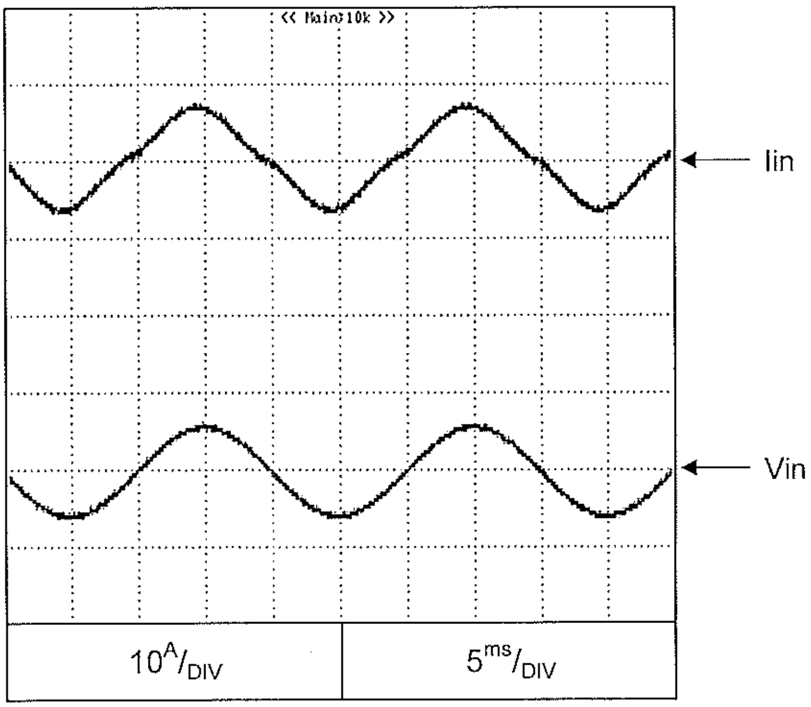
2.12 Input current waveform

Conditions: Vin: 100Vac
Vout: 100%
Iout: 100%
Ta = 25°C

Z10-72



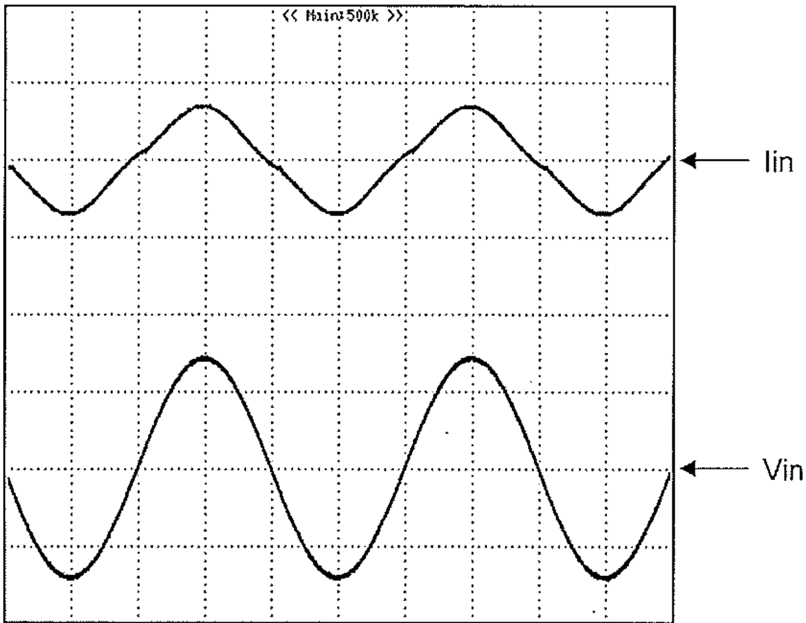
Conditions: Vin: 200Vac
Vout: 100%
Iout: 100%
Ta = 25°C



2.12 Input current waveform

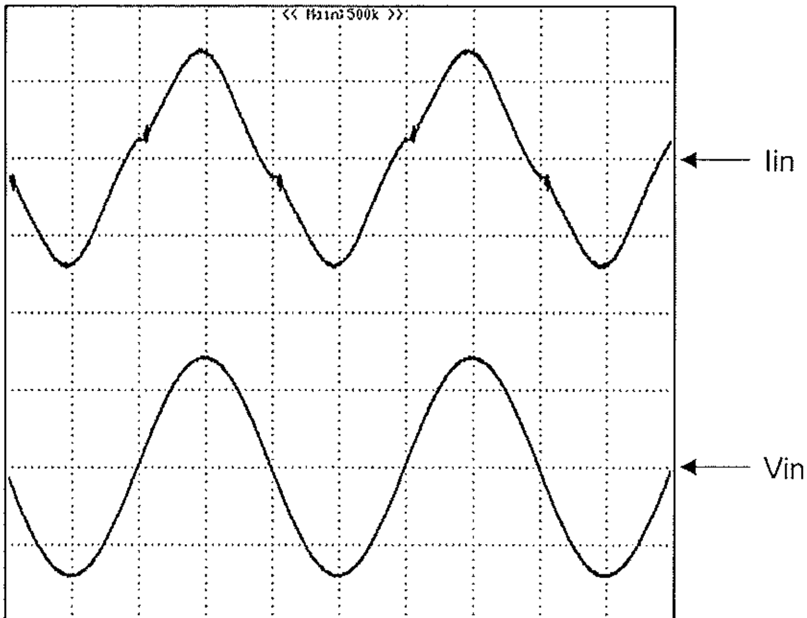
Conditions: Vin: 100Vac
Vout: 100%
Iout: 100%
Ta = 25°C

Z100-8



$20^{A}/_{DIV}$	$5^{ms}/_{DIV}$

Conditions: Vin: 200Vac
Vout: 100%
Iout: 100%
Ta = 25°C

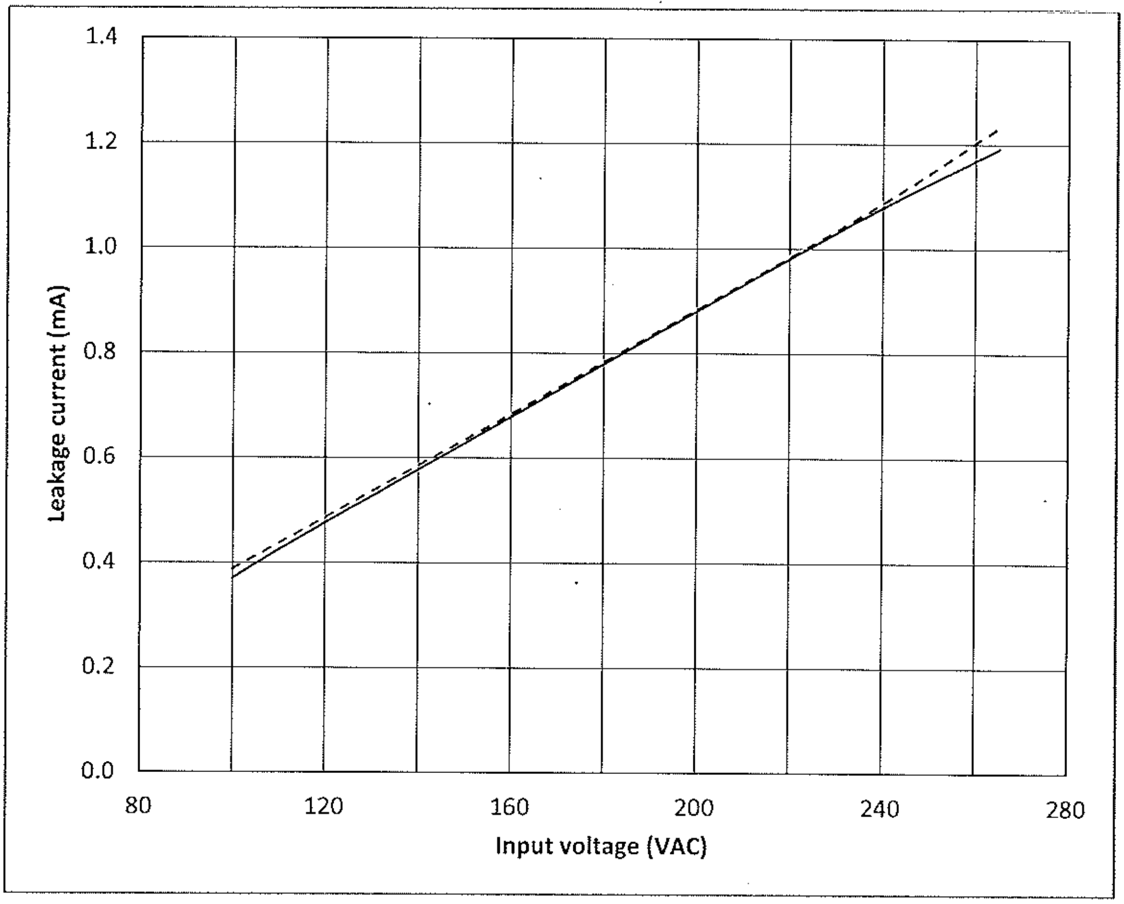


$5^{A}/_{DIV}$	$5^{ms}/_{DIV}$

2.13 Leakage current characteristics

Conditions: Vin: 100~265Vac
Iout: 0% - - - - - - - - -
Iout: 100% ————
Ta = 25°C
f=50Hz

Z100-8



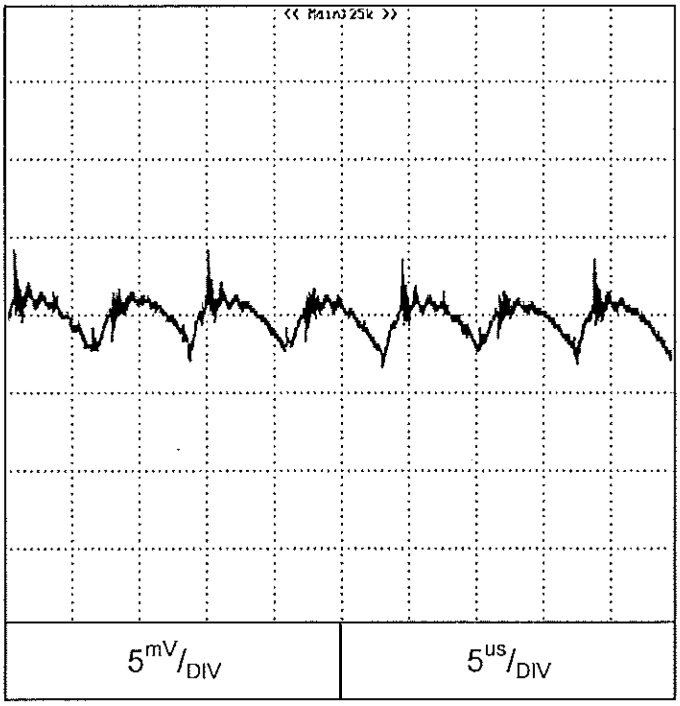
2.14 Output voltage ripple and noise waveform

Conditions: Vin: 100Vac
Vout: 100%
Iout: 100%
Ta = 25°C

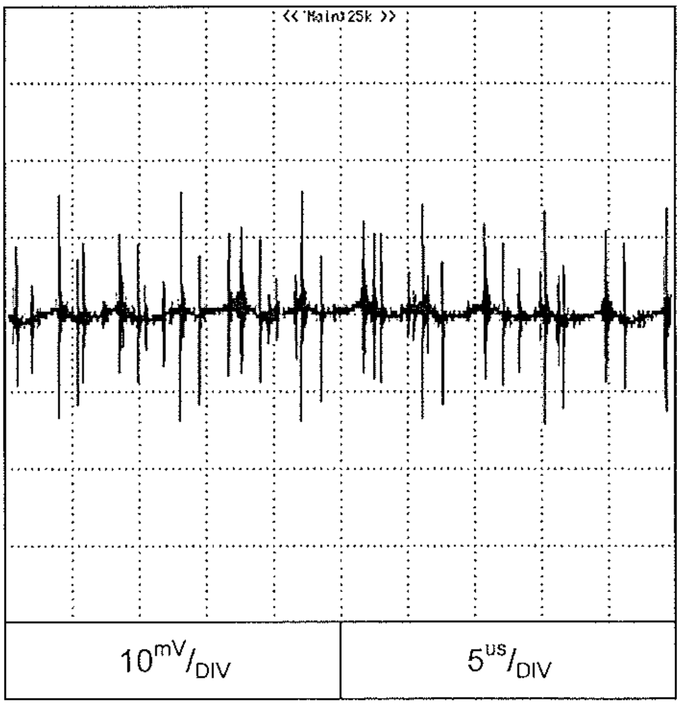
C.V mode

Normal Mode

Z10-72



Z36-24



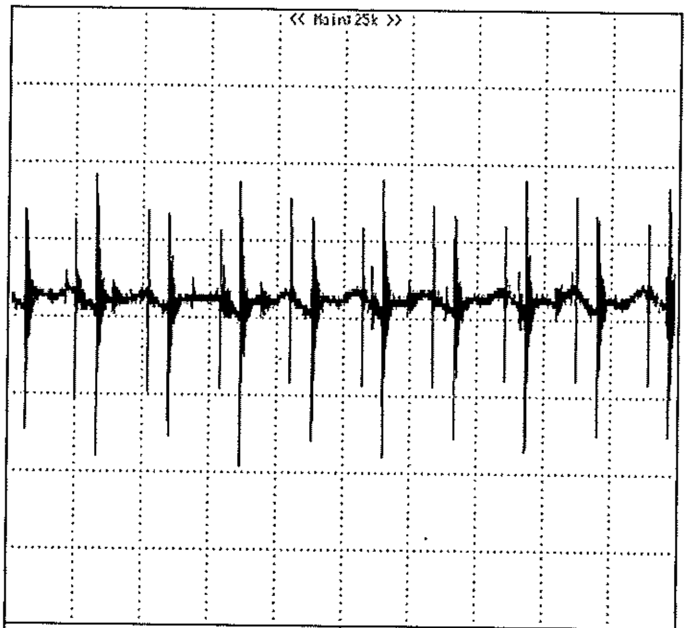
2.14 Output voltage ripple and noise waveform

Conditions: Vin: 100Vac
Vout: 100%
Iout: 100%
Ta = 25°C

C.V mode

Normal Mode

Z100-8



10 mV/DIV	5 us/DIV