

GEN-2U 5kW

EVALUATION

DATA

DWG: IA657-53-01		
APPD	CHK	DWG
<i>Ru</i> may 11 - 2008	<i>Ami P.</i> 11-May-08	<i>Dotan M.</i> Jan-6-08



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TERMINOLOGY USED

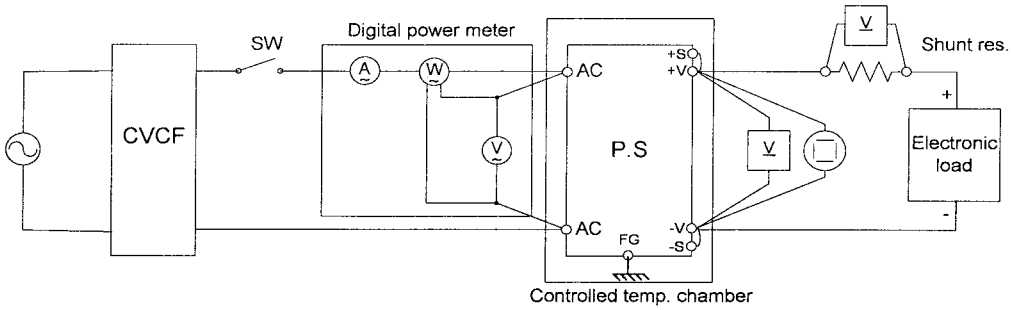
Definition

V_{in}	Input voltage
V_{out}	Output voltage
I_{in}	Input current
I_{out}	Output current
T_a	Ambient temperature
C.V	Constant voltage mode
C.C	Constant current mode

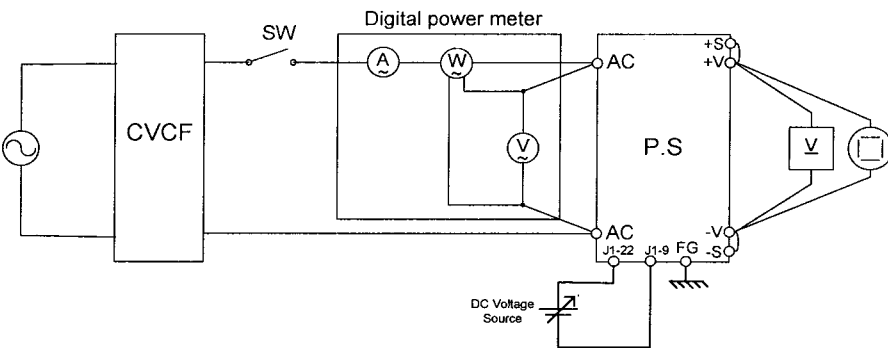
1. EVALUATION METHOD

1.1 Circuit used for determination

(1) Steady state data

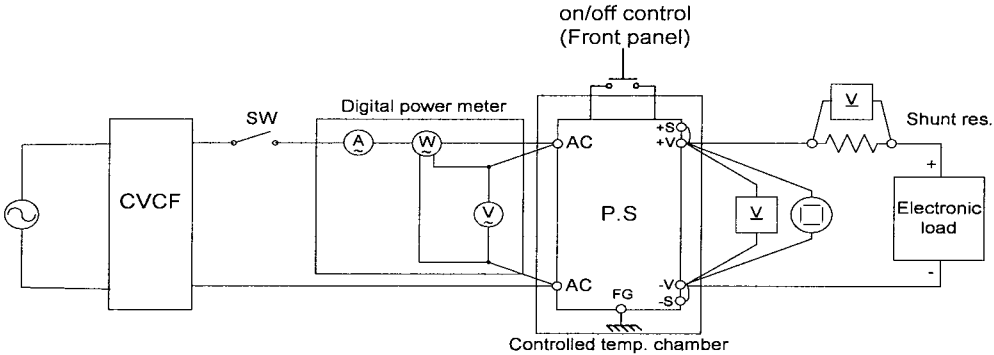


(2) Over voltage protection (OVP) characteristics

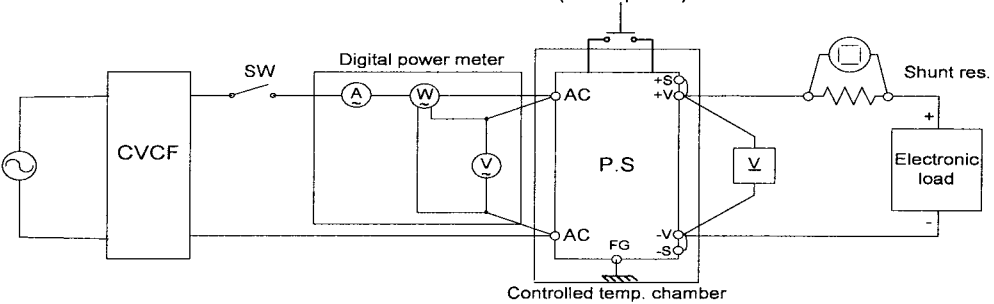


(3) Output rise/fall characteristics

Constant Voltage mode

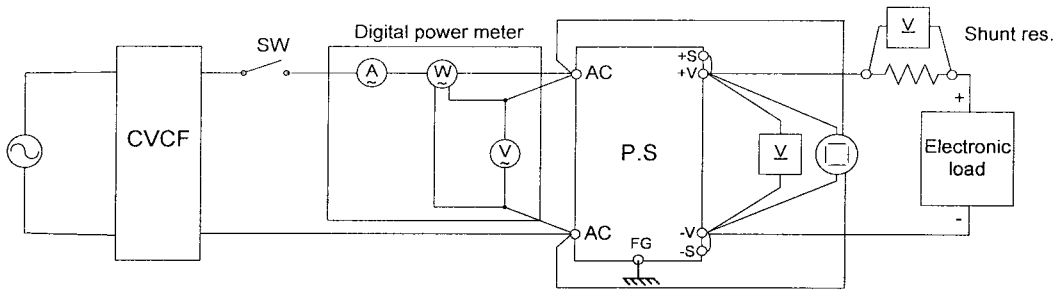


Constant Current mode

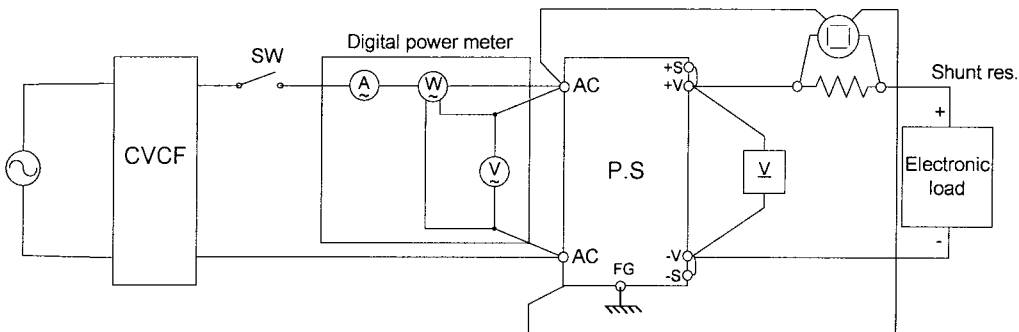


(4) Dynamic line response characteristics

Constant Voltage mode

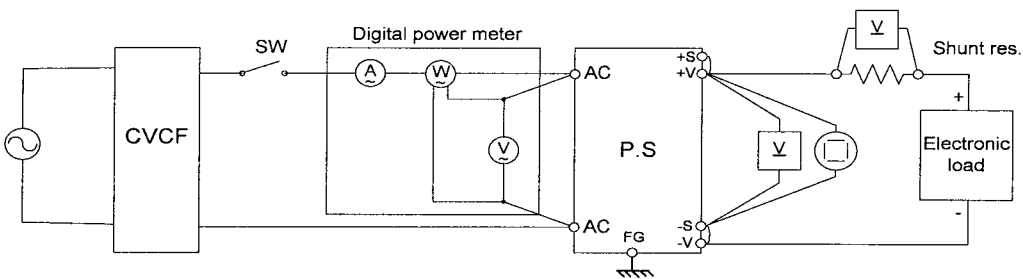


Constant Current mode



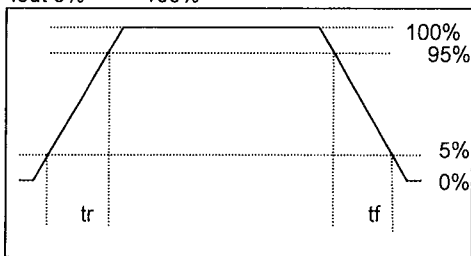
(5) Dynamic load response characteristics

Constant Voltage mode



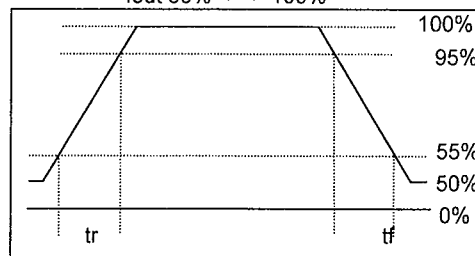
Output current waveform

lout 0% <---> 100%



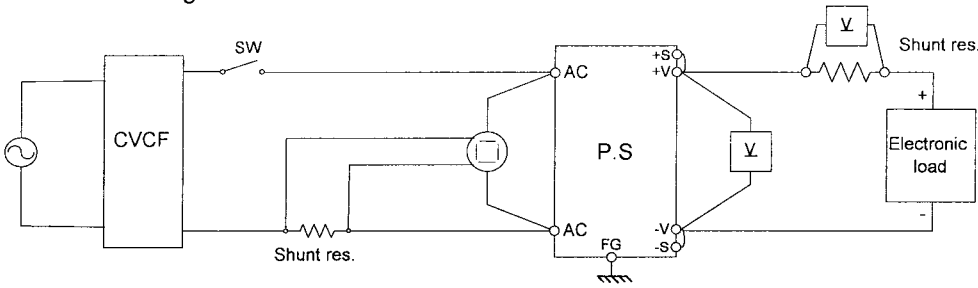
Output current waveform

lout 50% <---> 100%

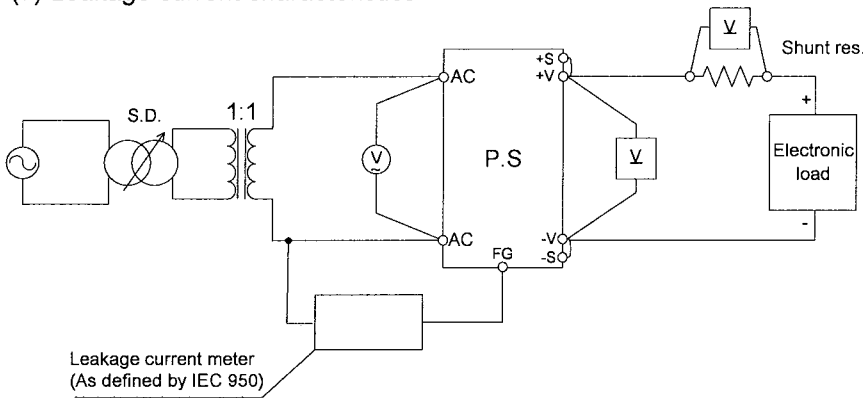


(6) Inrush current characteristics

Constant Voltage mode

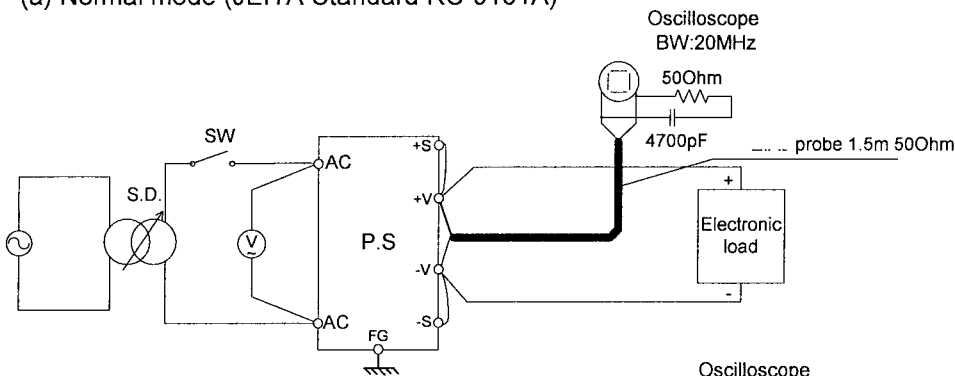


(7) Leakage current characteristics

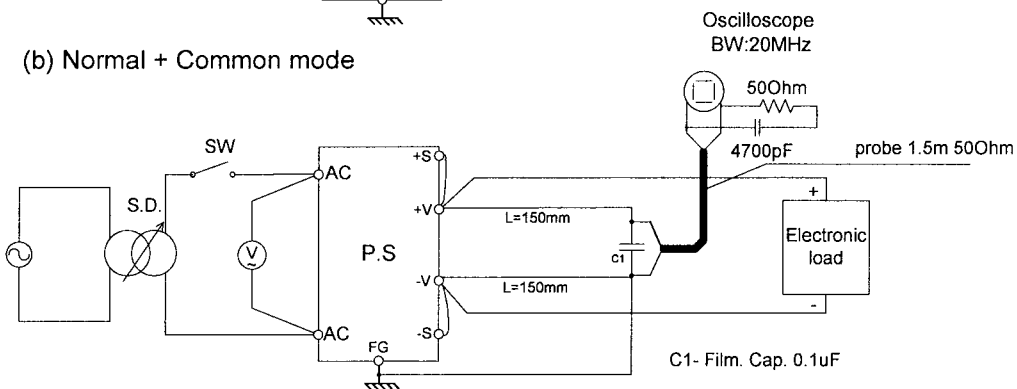


(8) Output ripple & noise waveform (8V to 300V models)

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

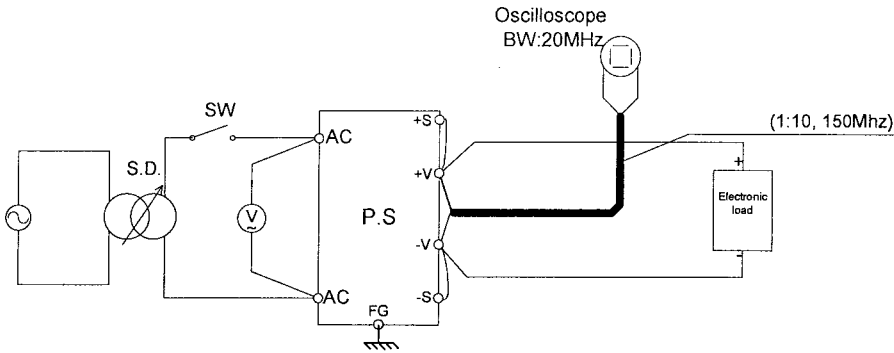


(b) Normal + Common mode

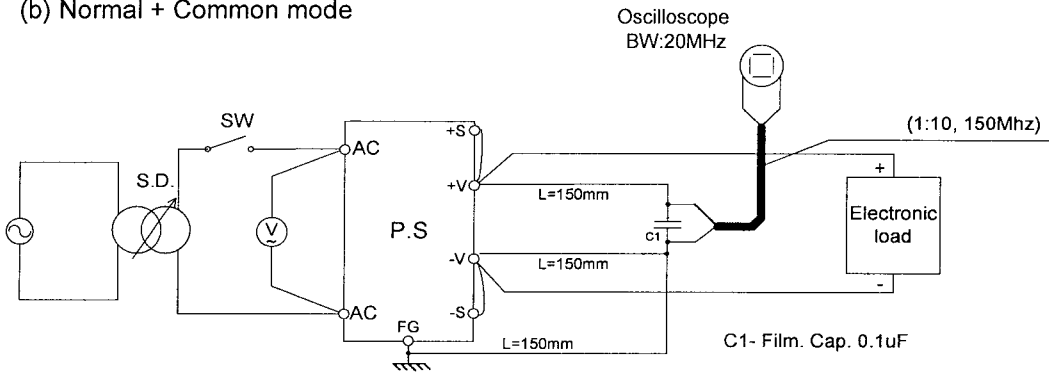


(9) Output ripple & noise waveform for 600V

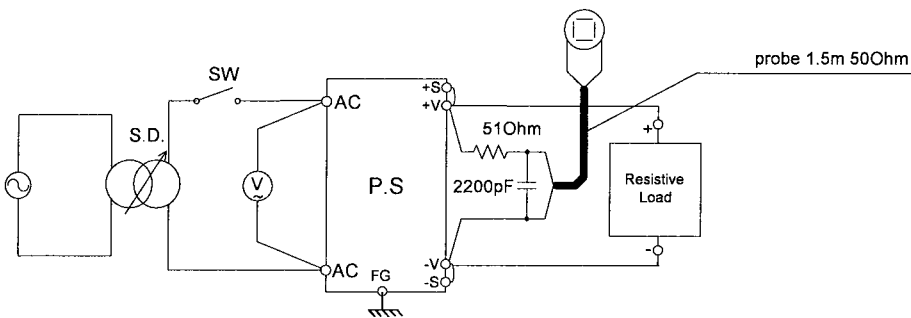
(a) Normal mode



(b) Normal + Common mode



(10) Ripple RMS Current



1.2 List of equipment used

	EQUIPMENT USED	MANUFACTURER	MODEL No.
1	Storage oscilloscope	YOKOGAWA	DL7100
2	Storage oscilloscope	YOKOGAWA	DL1740
3	Analog oscilloscope	HITACHI	V-1565
4	Digital multimeter	AGILENT	34401A
5	Digital power meter	YOKOGAWA	WT230
6	Autotransformer	METREL	HTN 450/30
7	AC Source	CHROMA	6590
8	Electronic load	H&H	ZS6060 SC150
9	Electronic load	H&H	ZS7006
10	Electronic load	H&H	ZS7060
11	Electronic load	CHROMA	63203
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	HIOKI	3155
17	Current probe	TEKTRONIX	P6021
18	Current probe	YOKOGAWA	701932

(1). Regulation - Line & Load, Temperature drift

GEN8-600

Conditions: Ta = 25°C

1. Regulation - Line & Load, C.V mode 3Φ200

Io	Vin				Line Regulation	
	170VAC	200VAC	208VAC	265VAC		
0%	8.000	8.000	8.000	8.000	0.0	0.000%
25%	7.999	7.999	7.999	7.999	0.0	0.000%
50%	7.998	7.998	7.998	7.998	0.0	0.000%
75%	7.997	7.997	7.997	7.997	0.0	0.000%
100%	7.996	7.996	7.996	7.996	0.0	0.000%
Load	4.0	4.0	4.0	4.0	mV	
Regulation	0.050%	0.050%	0.050%	0.050%		

2. Regulation - Line & Load, C.V mode 3Φ400

Io	Vin				Line Regulation	
	342VAC	380VAC	400VAC	460VAC		
0%	8.001	8.001	8.001	8.001	0.0	0.000%
25%	8.001	8.001	8.001	8.000	1.0	0.012%
50%	8.000	8.000	8.000	8.000	0.0	0.000%
75%	7.999	7.999	7.999	7.999	0.0	0.000%
100%	7.998	7.998	7.998	7.998	0.0	0.000%
Load	3.0	3.0	3.0	3.0	mV	
Regulation	0.037%	0.037%	0.037%	0.037%		

3. Temperature drift, C.V mode

Conditions: Vin:200V 3Φ
Iout:100%

Ta	0°C	25°C	50°C	Temp. Coefficient (0°C~50°C)	
Vout	7.9990	7.9965	7.9947	4.3 mV	11 ppm/°C

(1). Regulation - Line & Load, Temperature drift

GEN60-85

Conditions: Ta = 25°C

1. Regulation - Line & Load, C.V mode 3Φ200

Io	Vin				Line Regulation	
	170VAC	200VAC	208VAC	265VAC		
0%	59.999	59.999	59.999	59.999	0.0	0.000%
25%	59.999	59.999	59.999	59.999	0.0	0.000%
50%	59.999	59.999	59.999	59.999	0.0	0.000%
75%	59.999	59.999	59.999	59.999	0.0	0.000%
100%	59.998	59.998	59.998	59.998	0.0	0.000%
Load	1.0	1.0	1.0	1.0	mV	
Regulation	0.002%	0.002%	0.002%	0.002%		

2. Regulation - Line & Load, C.V mode 3Φ400

Io	Vin				Line Regulation	
	342VAC	380VAC	400VAC	460VAC		
0%	59.995	59.995	59.995	59.995	0.0	0.000%
25%	59.995	59.995	59.995	59.995	0.0	0.000%
50%	59.995	59.995	59.995	59.995	0.0	0.000%
75%	59.994	59.994	59.994	59.994	0.0	0.000%
100%	59.994	59.994	59.994	59.994	0.0	0.000%
Load	1.0	1.0	1.0	1.0	mV	
Regulation	0.002%	0.002%	0.002%	0.002%		

3. Temperature drift, C.V mode

Conditions: Vin:200V 3Φ
Iout:100%

Ta	0°C	25°C	50°C	Temp. Coefficient (0°C~50°C)	
Vout	59.128	59.119	59.112	16 mV	5 ppm/°C

(1). Regulation - Line & Load, Temperature drift

GEN150-34

Conditions: Ta = 25°C

1. Regulation - Line & Load, C.V mode 3Φ200

Io	Vin				Line Regulation	
	170VAC	200VAC	208VAC	265VAC		
0%	150.006	150.006	150.006	150.005	1.0	0.001%
25%	150.005	150.005	150.005	150.005	0.0	0.000%
50%	150.004	150.004	150.004	150.003	1.0	0.001%
75%	150.003	150.003	150.003	150.003	0.0	0.000%
100%	150.002	150.002	150.002	150.001	1.0	0.001%
Load	4.0	4.0	4.0	4.0	mV	
Regulation	0.003%	0.003%	0.003%	0.003%		

2. Regulation - Line & Load, C.V mode 3Φ400

Io	Vin				Line Regulation	
	342VAC	380VAC	400VAC	460VAC		
0%	150.010	150.010	150.010	150.010	0.0	0.000%
25%	150.010	150.010	150.010	150.010	0.0	0.000%
50%	150.009	150.009	150.009	150.009	0.0	0.000%
75%	150.008	150.008	150.008	150.008	0.0	0.000%
100%	150.008	150.008	150.008	150.008	0.0	0.000%
Load	2.0	2.0	2.0	2.0	mV	
Regulation	0.001%	0.001%	0.001%	0.001%		

3. Temperature drift, C.V mode

Conditions: Vin:200V 3Φ
Iout:100%

Ta	0°C	25°C	50°C	Temp. Coefficient (0°C~50°C)	
Vout	150.052	150.017	149.984	68 mV	9 ppm/°C

(1). Regulation - Line & Load, Temperature drift

GEN600-8.5

Conditions: Ta = 25°C

1. Regulation - Line & Load, C.V mode 3Φ200

Io	Vin				Line Regulation	
	170VAC	200VAC	208VAC	265VAC		
0%	600.003	600.003	600.003	600.003	0.0	0.000%
25%	600.003	600.003	600.003	600.003	0.0	0.000%
50%	600.003	600.003	600.003	600.003	0.0	0.000%
75%	600.002	600.002	600.002	600.002	0.0	0.000%
100%	600.002	600.002	600.002	600.002	0.0	0.000%
Load	1.0	1.0	1.0	1.0	mV	
Regulation	0.000%	0.000%	0.000%	0.000%		

2. Regulation - Line & Load, C.V mode 3Φ400

Io	Vin				Line Regulation	
	342VAC	380VAC	400VAC	460VAC		
0%	600.061	600.061	600.061	600.061	0.0	0.000%
25%	600.062	600.062	600.062	600.062	0.0	0.000%
50%	600.062	600.062	600.062	600.062	0.0	0.000%
75%	600.062	600.062	600.062	600.062	0.0	0.000%
100%	600.064	600.064	600.064	600.064	0.0	0.000%
Load	3.0	3.0	3.0	3.0	mV	
Regulation	0.000%	0.000%	0.000%	0.000%		

3. Temperature drift, C.V mode

Conditions: Vin:200V 3Φ
Iout:100%

Ta	0°C	25°C	50°C	Temp. Coefficient (0°C~50°C)	
Vout	599.957	600.003	600.080	123 mV	4 ppm/°C

(1). Regulation - Line & Load, Temperature drift

GEN8-600

Conditions: Ta = 25°C

1. Regulation - Line & Load, C.C mode 3Φ200 (*)

Vo	Vin				Line Regulation	
	170VAC	200VAC	208VAC	265VAC		
0%	591.659	591.667	591.693	591.714	55.1	0.009%
25%	591.588	591.607	591.634	591.654	66.3	0.011%
50%	591.560	591.598	591.610	591.631	71.3	0.012%
75%	591.545	591.579	591.633	591.619	87.7	0.015%
100%	591.544	591.572	591.619	591.614	74.3	0.012%
Load	114.6	95.1	82.5	100.3	mA	
Regulation	0.019%	0.016%	0.014%	0.017%		

2. Regulation - Line & Load, C.C mode 3Φ400 (*)

Vo	Vin				Line Regulation	
	342VAC	380VAC	400VAC	460VAC		
0%	599.830	599.854	599.841	599.850	24.6	0.004%
25%	599.778	599.791	599.791	599.802	23.8	0.004%
50%	599.750	599.771	599.803	599.772	52.4	0.009%
75%	599.739	599.758	599.767	599.757	28.5	0.005%
100%	599.769	599.752	599.760	599.755	17.0	0.003%
Load	91.2	102.8	81.1	95.0	mA	
Regulation	0.015%	0.017%	0.014%	0.016%		

3. Temperature drift, C.C mode

Conditions: Vin:200V 3Φ
Iout:100%

Ta	0°C	25°C	50°C	Temp. Coefficient (0°C~50°C)	
Iout	599.62	599.90	600.74	1120 mA	37 ppm/°C

Notes:

(*) Not including load regulation thermal drift effect.

(1). Regulation - Line & Load, Temperature drift

GEN60-85

Conditions: Ta = 25°C

1. Regulation - Line & Load, C.C mode 3Φ200 (*)

Vo	Vin				Line Regulation	
	170VAC	200VAC	208VAC	265VAC		
0%	85.8214	85.8214	85.8214	85.8228	1.4	0.002%
25%	85.8200	85.8207	85.8214	85.8207	1.4	0.002%
50%	85.8186	85.8186	85.8179	85.8186	0.7	0.001%
75%	85.8137	85.8137	85.8144	85.8144	0.7	0.001%
100%	85.8116	85.8109	85.8102	85.8102	1.4	0.002%
Load	9.8	10.5	11.2	12.6	mA	
Regulation	0.011%	0.012%	0.013%	0.015%		

2. Regulation - Line & Load, C.C mode 3Φ400 (*)

Vo	Vin				Line Regulation	
	342VAC	380VAC	400VAC	460VAC		
0%	85.0150	85.0150	85.0080	85.0080	7.0	0.008%
25%	85.0010	85.0010	85.0010	85.0080	7.0	0.008%
50%	85.0010	85.0010	84.9940	84.9940	7.0	0.008%
75%	84.9870	84.9940	84.9940	84.9940	7.0	0.008%
100%	84.9870	84.9870	84.9870	84.9870	0.0	0.000%
Load	28.0	28.0	21.0	21.0	mA	
Regulation	0.033%	0.033%	0.025%	0.025%		

3. Temperature drift, C.C mode

Conditions: Vin:200V 3Φ
Iout:100%

Ta	0°C	25°C	50°C	Temp. Coefficient (0°C~50°C)	
Iout	85.092	84.959	84.945	147 mA	35 ppm/°C

Notes:

(*) Not including load regulation thermal drift effect.

(1). Regulation - Line & Load, Temperature drift

GEN150-34

Conditions: Ta = 25°C

1. Regulation - Line & Load, C.C mode 3Φ200 (*)

Vo	Vin				Line Regulation	
	170VAC	200VAC	208VAC	265VAC		
0%	34.0781	34.0781	34.0781	34.0781	0.0	0.000%
25%	34.0774	34.0774	34.0774	34.0774	0.0	0.000%
50%	34.0767	34.0767	34.0767	34.0767	0.0	0.000%
75%	34.0760	34.0760	34.0760	34.0760	0.0	0.000%
100%	34.0753	34.0753	34.0753	34.0753	0.0	0.000%
Load	2.8	2.8	2.8	2.8	mA	
Regulation	0.008%	0.008%	0.008%	0.008%		

2. Regulation - Line & Load, C.C mode 3Φ400 (*)

Vo	Vin				Line Regulation	
	342VAC	380VAC	400VAC	460VAC		
0%	34.4008	34.4008	34.4008	34.4008	0.0	0.000%
25%	34.4001	34.4001	34.4001	34.4001	0.0	0.000%
50%	34.3994	34.3994	34.3994	34.3994	0.0	0.000%
75%	34.3994	34.3994	34.3994	34.3994	0.0	0.000%
100%	34.3987	34.3987	34.3987	34.3987	0.0	0.000%
Load	2.1	2.1	2.1	2.1	mA	
Regulation	0.006%	0.006%	0.006%	0.006%		

3. Temperature drift, C.C mode

Conditions: Vin:200V 3Φ
Iout:100%

Ta	0°C	25°C	50°C	Temp. Coefficient (0°C~50°C)	
Iout	34.028	34.007	33.990	38 mA	22 ppm/°C

Notes:

(*) Not including load regulation thermal drift effect.

(1). Regulation - Line & Load, Temperature drift

GEN600-8.5

Conditions: Ta = 25°C

1. Regulation - Line & Load, C.C mode 3Φ200 (*)

Vo	Vin				Line Regulation	
	170VAC	200VAC	208VAC	265VAC		
0%	8.4980	8.4980	8.4980	8.4980	0.0	0.000%
25%	8.4966	8.4966	8.4966	8.4966	0.0	0.000%
50%	8.4966	8.4966	8.4966	8.4966	0.0	0.000%
75%	8.4966	8.4966	8.4966	8.4966	0.0	0.000%
100%	8.4973	8.4973	8.4973	8.4973	0.0	0.000%
Load	1.4	1.4	1.4	1.4	mA	
Regulation	0.016%	0.016%	0.016%	0.016%		

2. Regulation - Line & Load, C.C mode 3Φ400 (*)

Vo	Vin				Line Regulation	
	342VAC	380VAC	400VAC	460VAC		
0%	8.5001	8.5001	8.5001	8.5001	0.0	0.000%
25%	8.4990	8.4990	8.4990	8.4990	0.0	0.000%
50%	8.4984	8.4984	8.4984	8.4984	0.0	0.000%
75%	8.4979	8.4979	8.4979	8.4979	0.0	0.000%
100%	8.4970	8.4970	8.4970	8.4970	0.0	0.000%
Load	3.1	3.1	3.1	3.1	mA	
Regulation	0.036%	0.036%	0.036%	0.036%		

3. Temperature drift, C.C mode

Conditions: Vin:200V 3Φ
Iout:100%

Ta	0°C	25°C	50°C	Temp. Coefficient (0°C~50°C)	
Iout	8.5162	8.5036	8.5036	12.6 mA	30 ppm/°C

Notes:

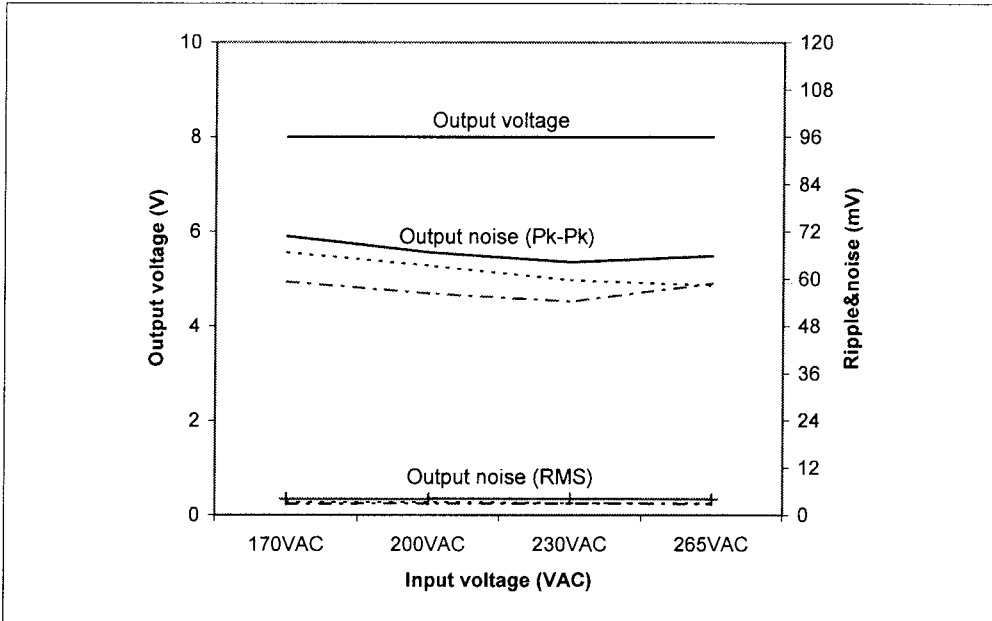
(*) Not including load regulation thermal drift effect.

(2). Output voltage and ripple voltage vs. input voltage
C.V mode

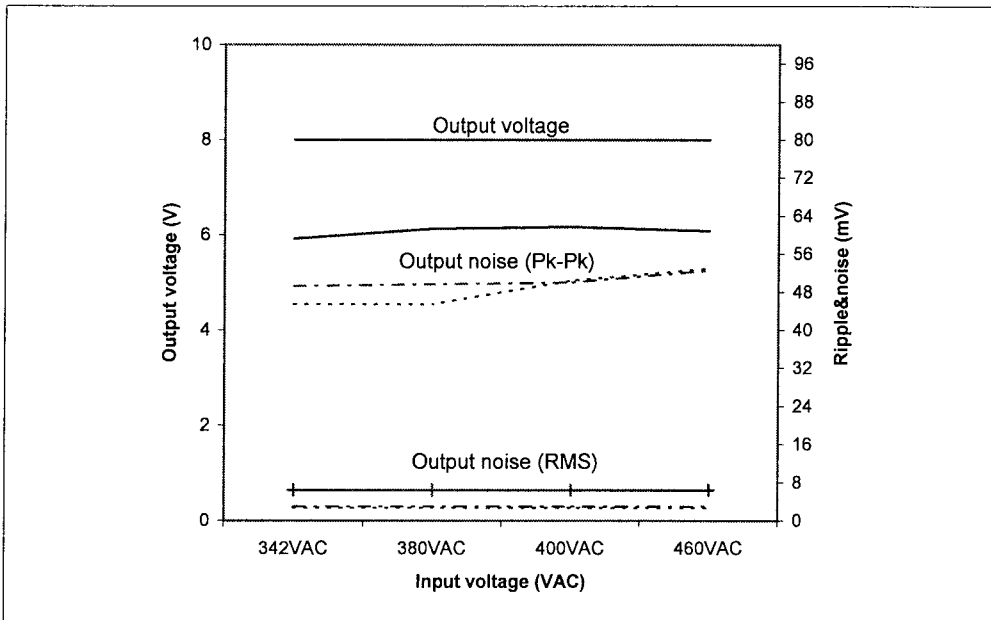
Conditions: Iout:100%

Ta: 0°C
25°C
50°C

GEN8-600 3Φ 200



GEN8-600 3Φ 400

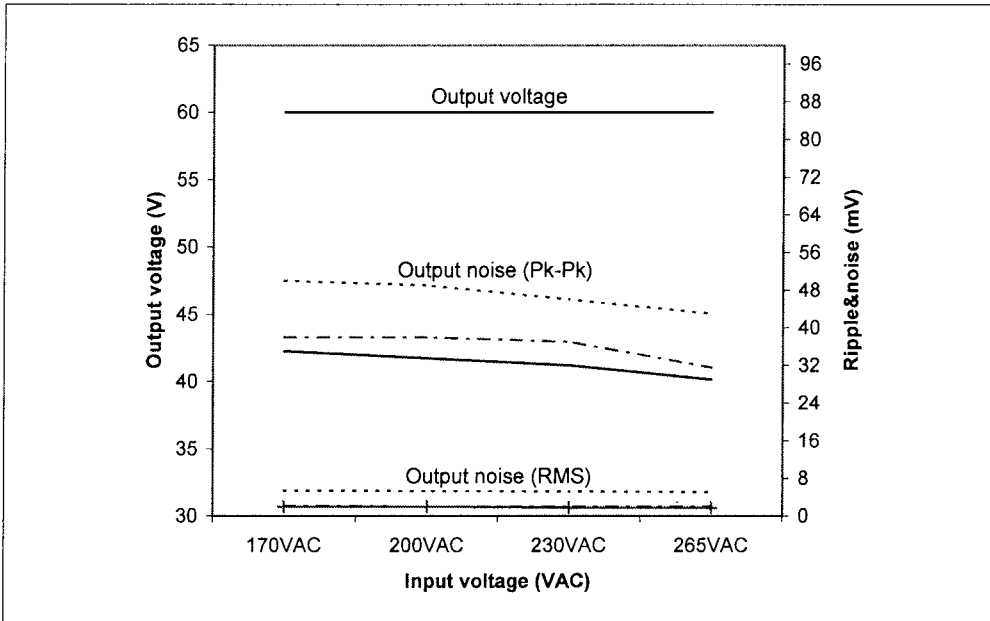


(2). Output voltage and ripple voltage vs. input voltage
C.V mode

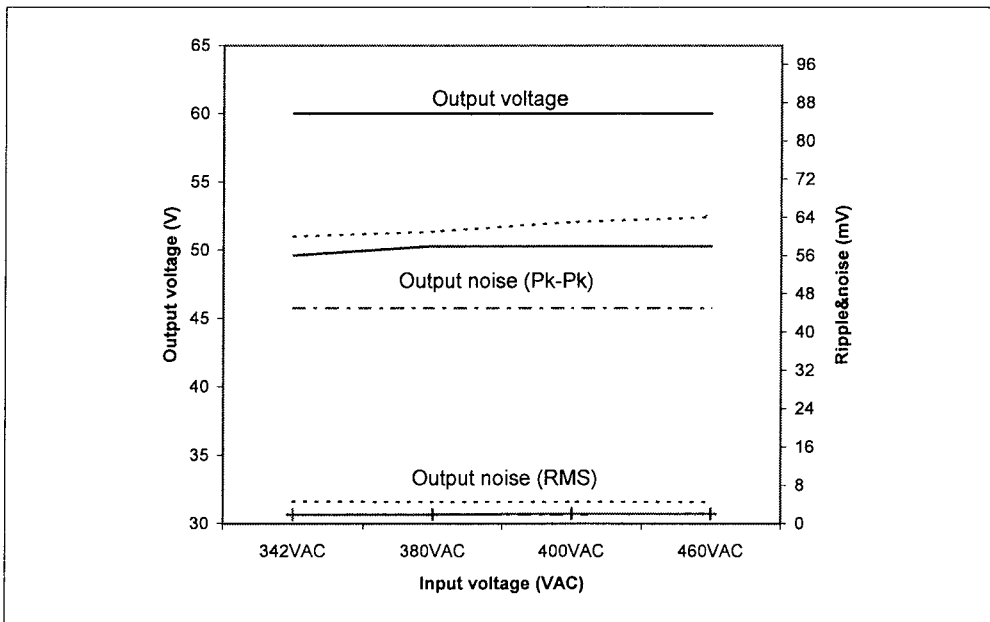
Conditions: Iout:100%

Ta: 0°C -----
25°C - - - - -
50°C _____

GEN60-85 3Φ 200



GEN60-85 3Φ 400

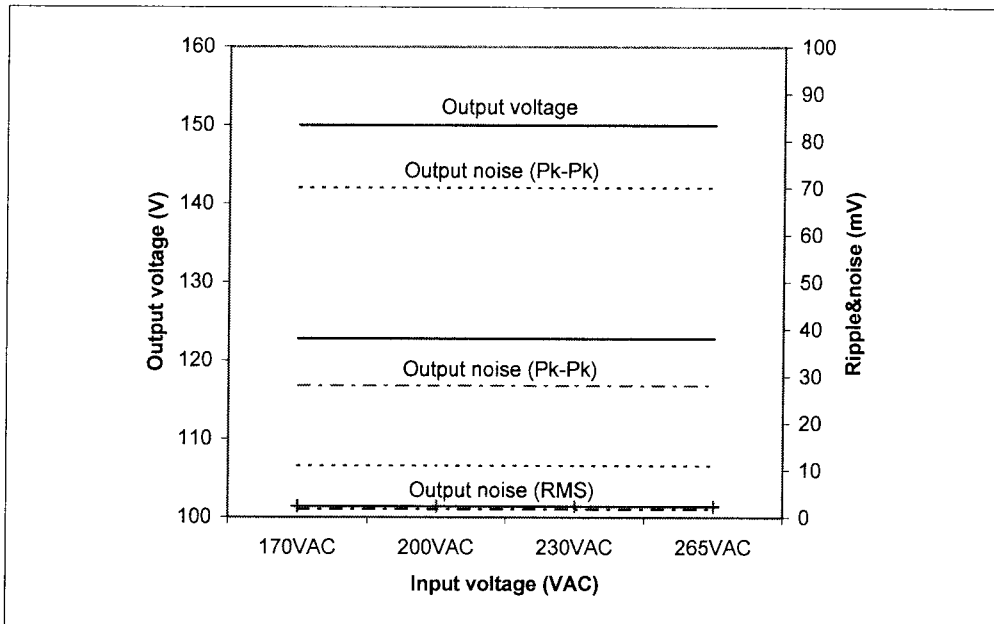


(2). Output voltage and ripple voltage vs. input voltage
C.V mode

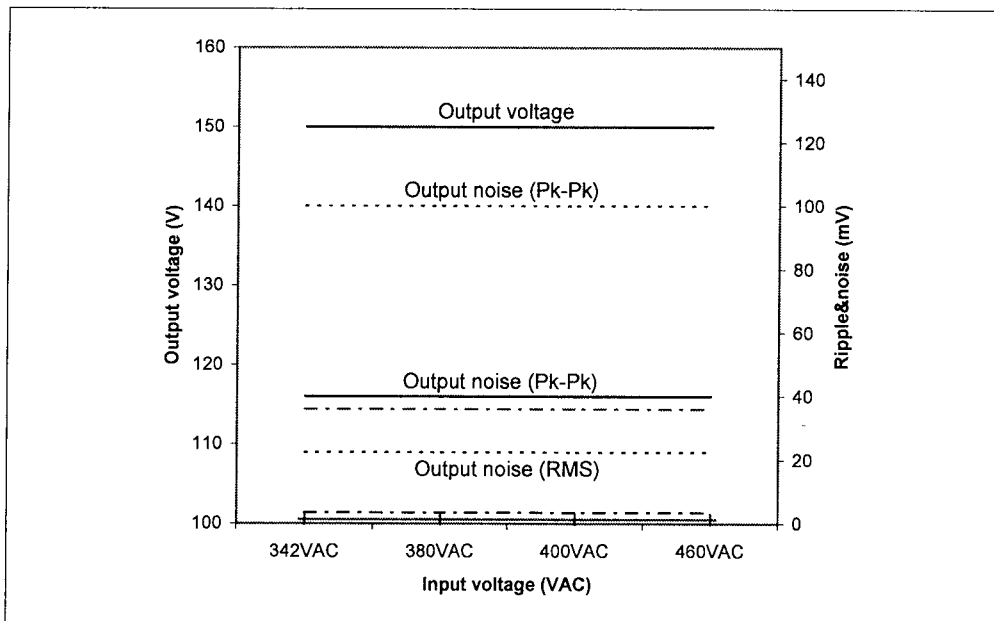
Conditions: I_{out}:100%

T_a: 0°C -----
25°C - - - - -
50°C _____

GEN150-34 3Φ 200



GEN150-34 3Φ 400

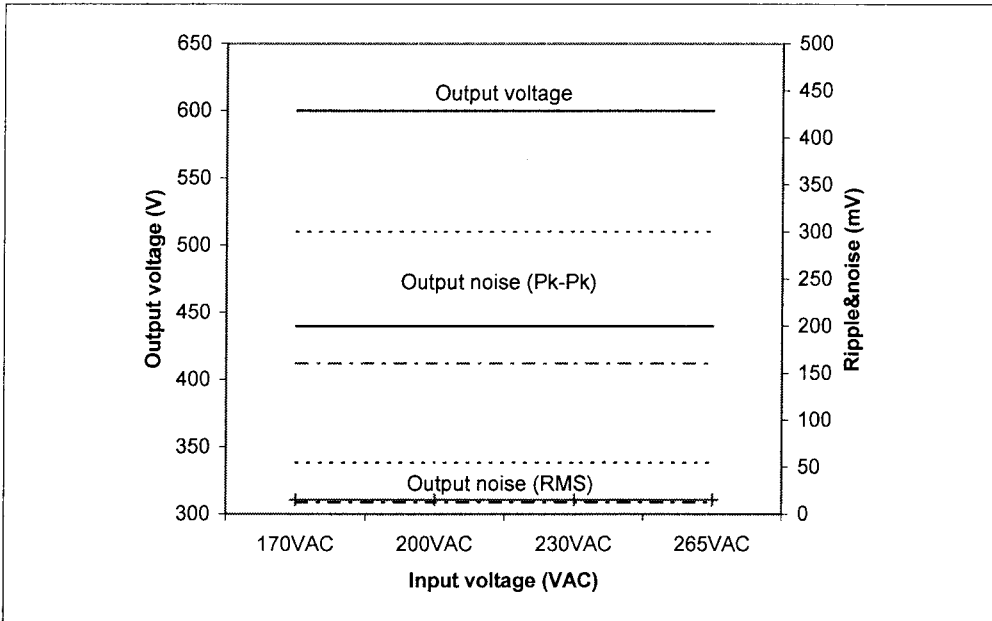


(2). Output voltage and ripple voltage vs. input voltage
C.V mode

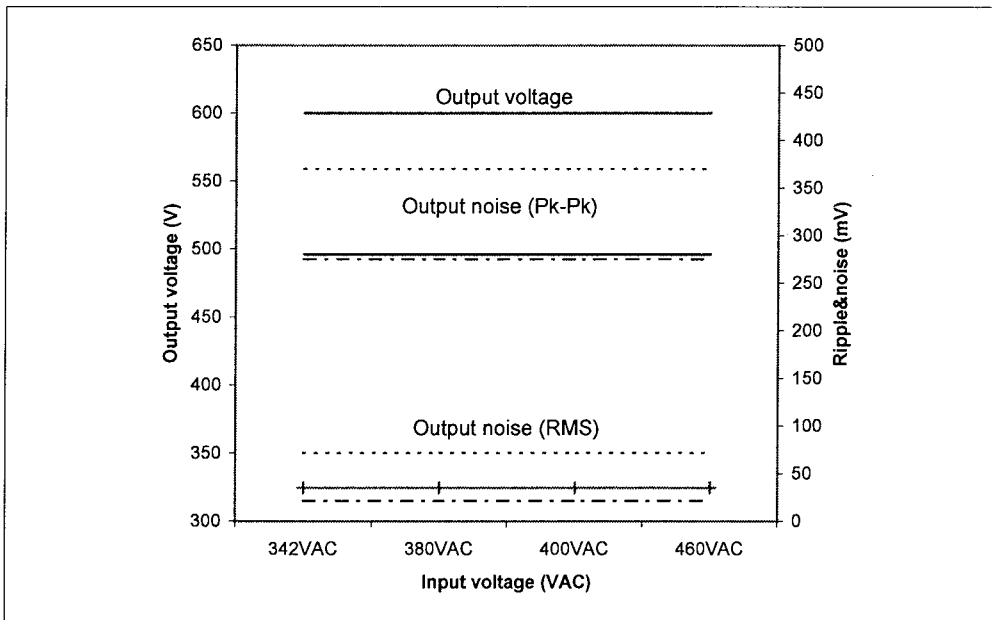
Conditions: Iout:100%

Ta: 0°C
25°C
50°C

GEN600-8.5 3Φ 200



GEN600-8.5 3Φ 400

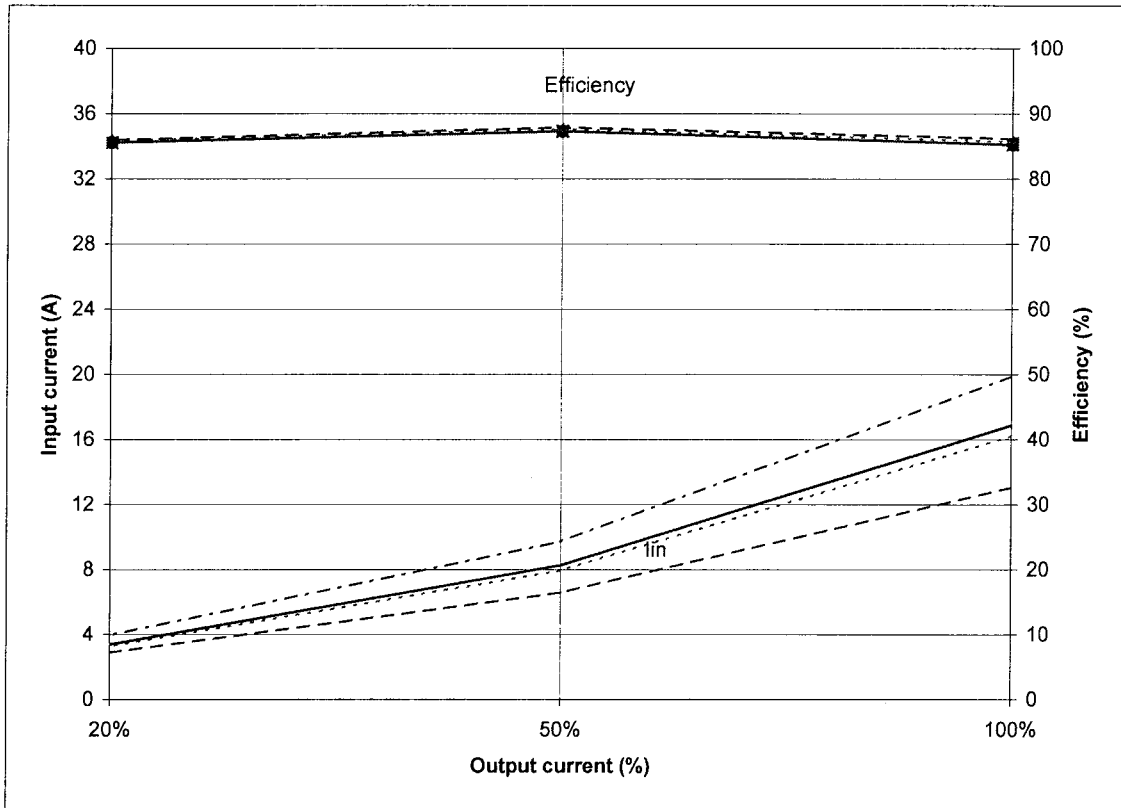


(3). Efficiency and Input current vs. Output current

Conditions:

- Vin: 170 VAC -----
- 200 VAC -----
- 208 VAC -----
- 265 VAC -----
- Vout: 100%
- Ta: 25°C

GEN8-600 3Φ 200

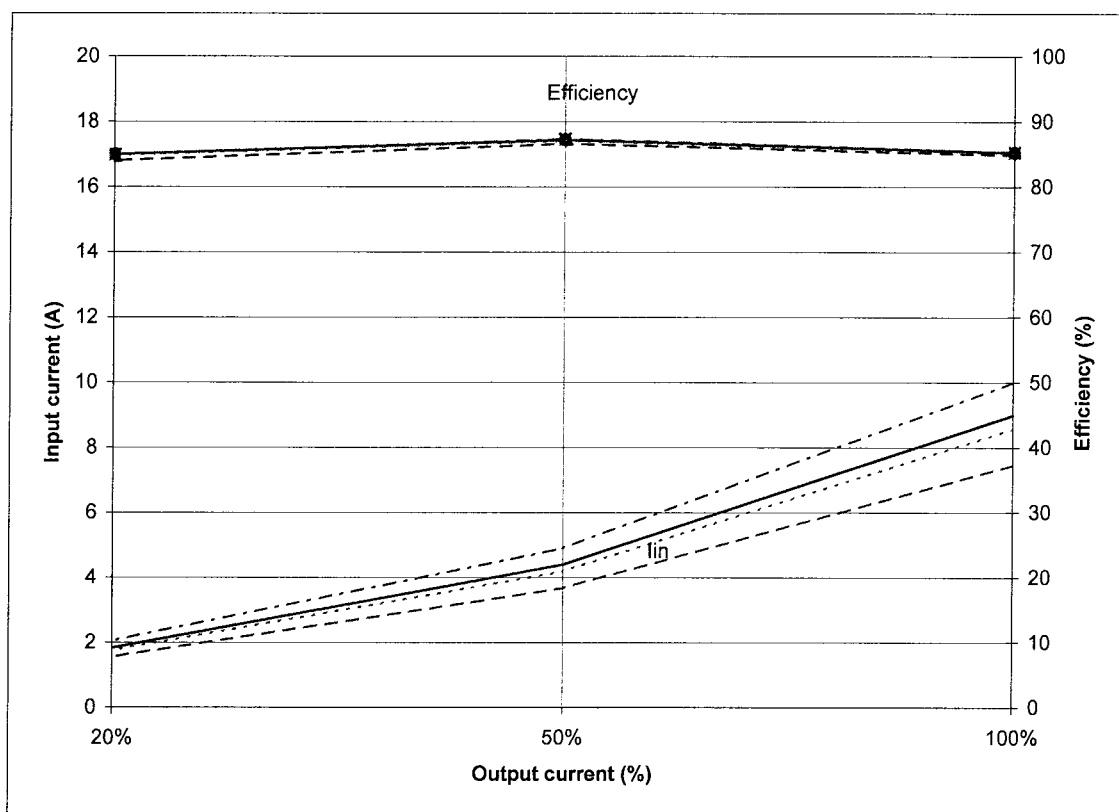


(3). Efficiency and Input current vs. Output current

Conditions:

- Vin: 342 VAC -----
- 380 VAC -----
- 400 VAC -----
- 460 VAC -----
- Vout: 100%
- Ta: 25°C

GEN8-600 3Φ 400

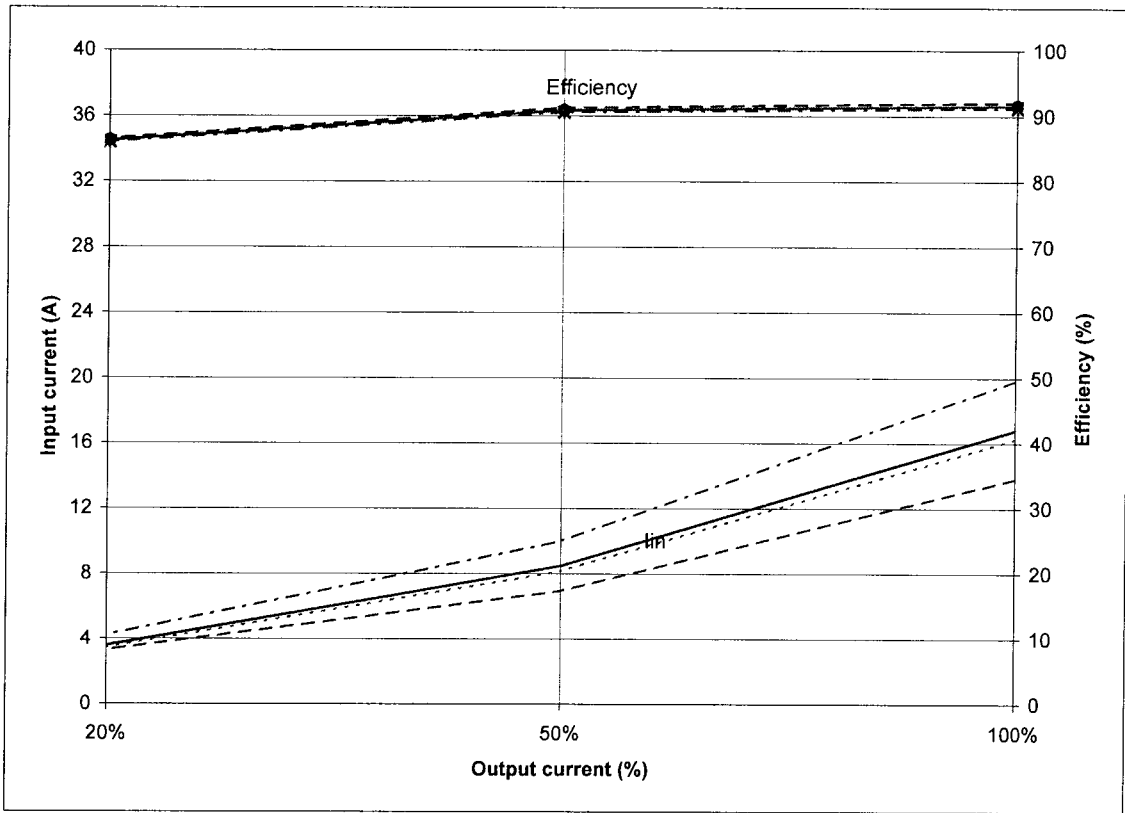


(3). Efficiency and Input current vs. Output current

Conditions:

- Vin: 170 VAC -----
- 200 VAC -----
- 208 VAC -----
- 265 VAC -----
- Vout: 100%
- Ta: 25°C

GEN60-85 3Φ 200

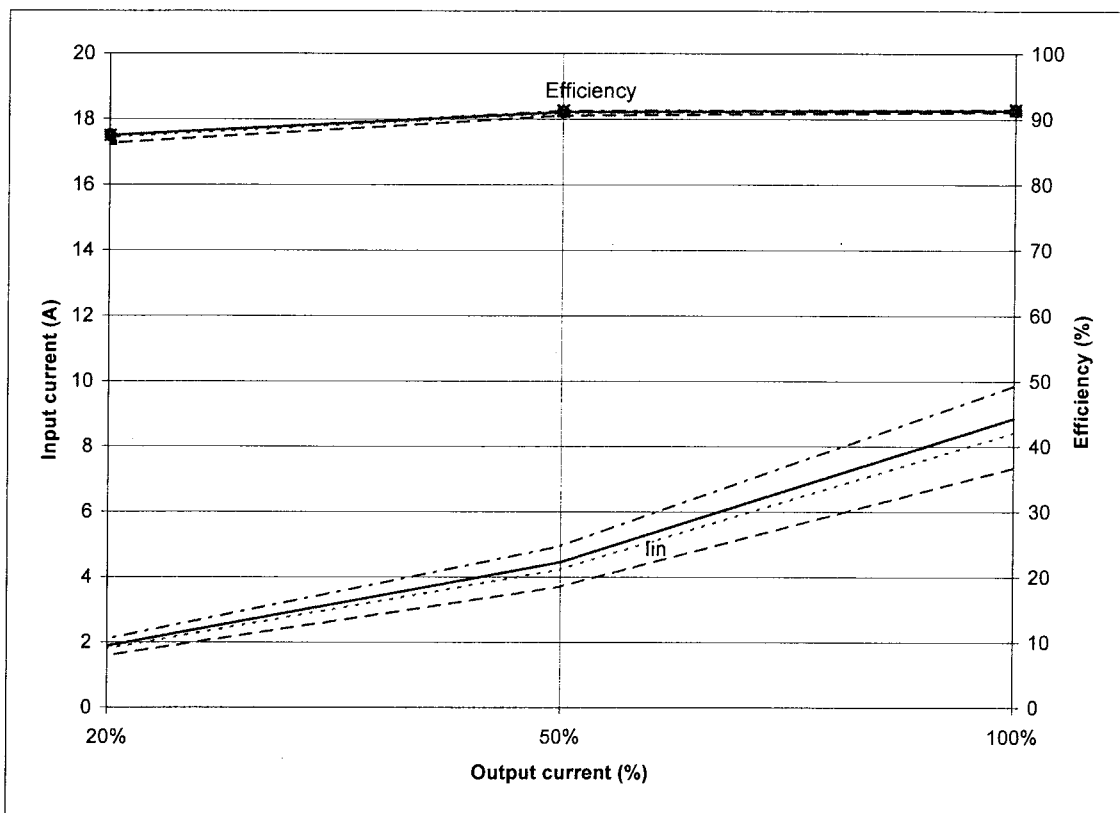


(3). Efficiency and Input current vs. Output current

Conditions:

- Vin: 342 VAC -----
- 380 VAC -----
- 400 VAC -----
- 460 VAC -----
- Vout: 100%
- Ta: 25°C

GEN60-85 3Φ 400

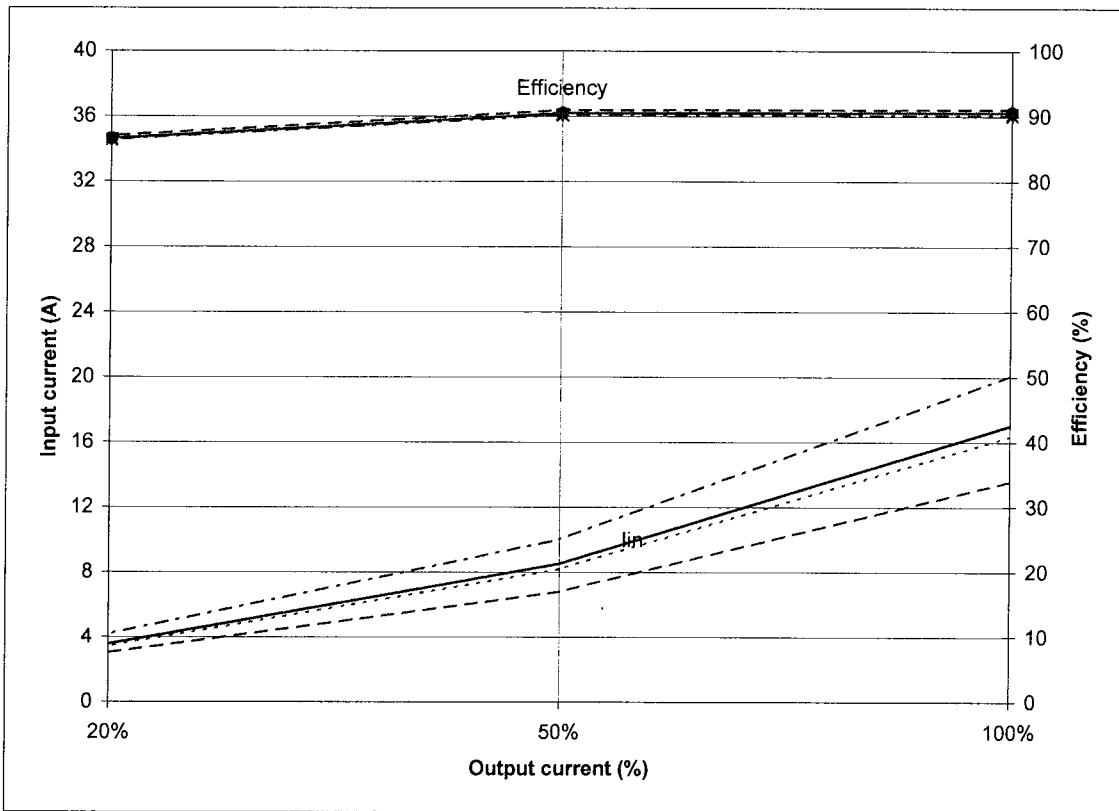


(3). Efficiency and Input current vs. Output current

Conditions:

- Vin: 170 VAC -----
- 200 VAC -----
- 208 VAC -----
- 265 VAC -----
- Vout: 100%
- Ta: 25°C

GEN150-34 3Φ 200

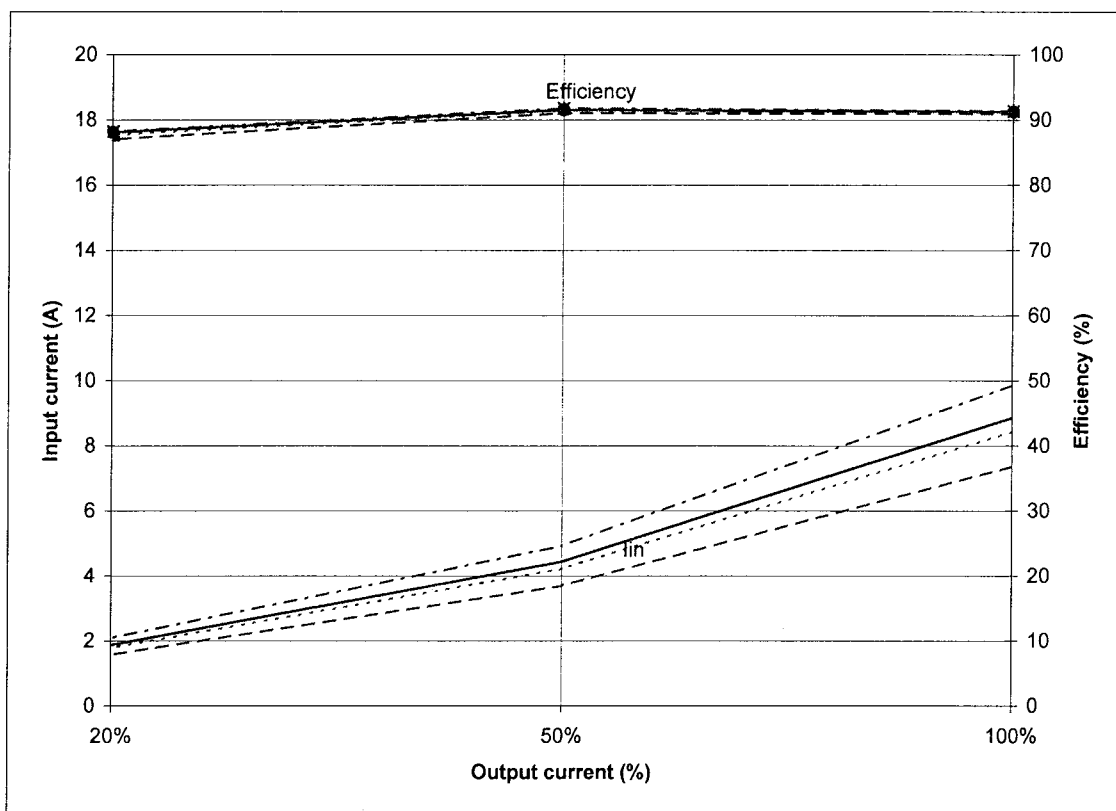


(3). Efficiency and Input current vs. Output current

Conditions:

- V_{in}: 342 VAC -----
- 380 VAC _____
- 400 VAC - - - - -
- 460 VAC - - - - -
- V_{out}: 100%
- T_a: 25°C

GEN150-34 3Φ 400

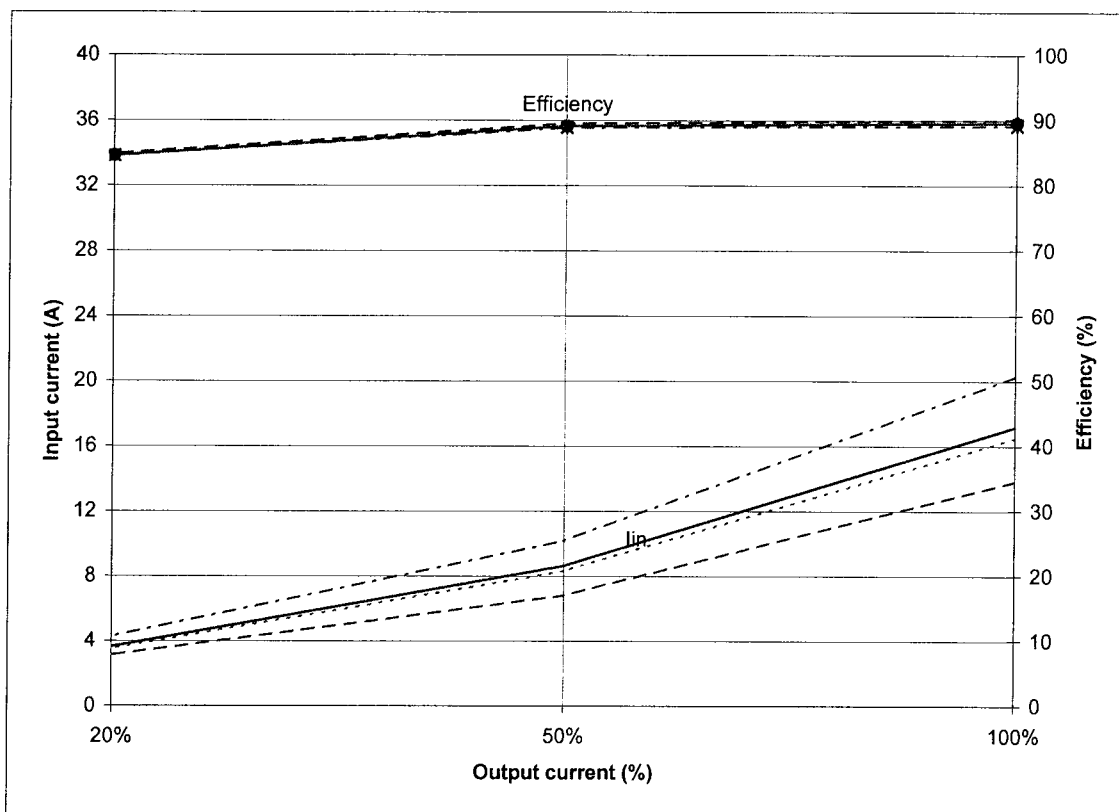


(3). Efficiency and Input current vs. Output current

Conditions:

- Vin: 170 VAC -----
- 200 VAC -----
- 208 VAC -----
- 265 VAC -----
- Vout:100%
- Ta: 25°C

GEN600-8.5 3Φ 200

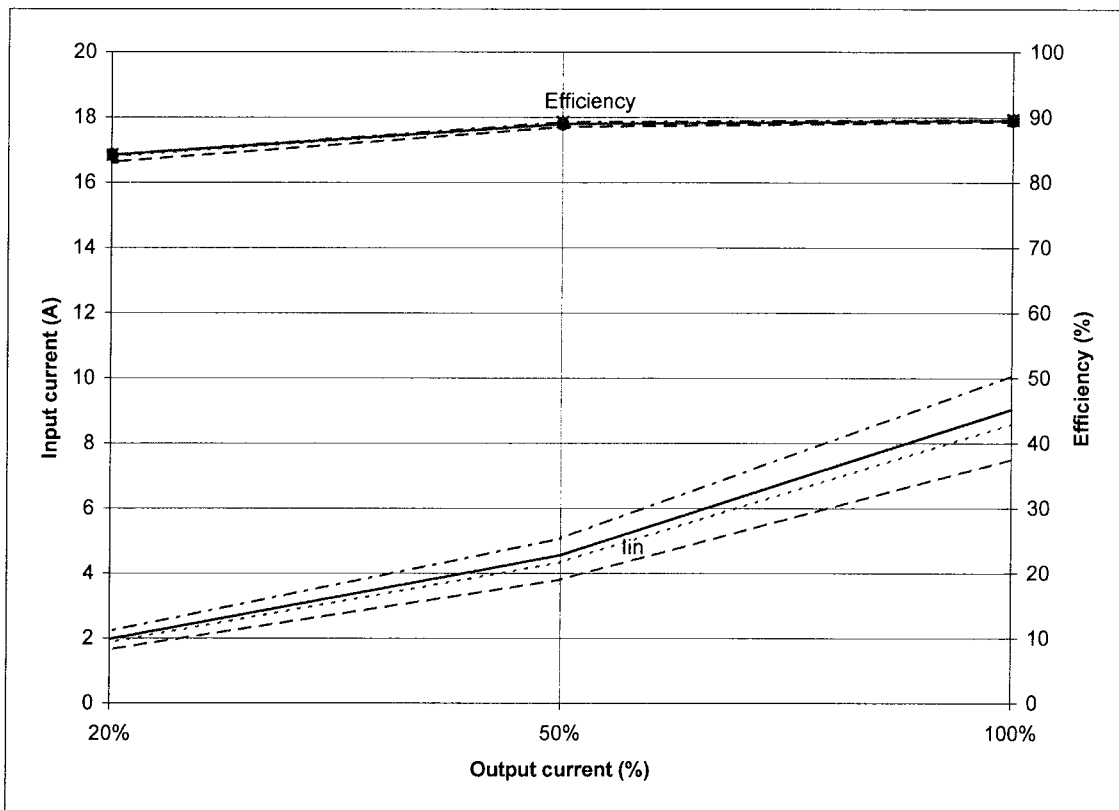


(3). Efficiency and Input current vs. Output current

Conditions:

- Vin: 342 VAC -----
- 380 VAC -----
- 400 VAC -----
- 460 VAC -----
- Vout:100%
- Ta: 25°C

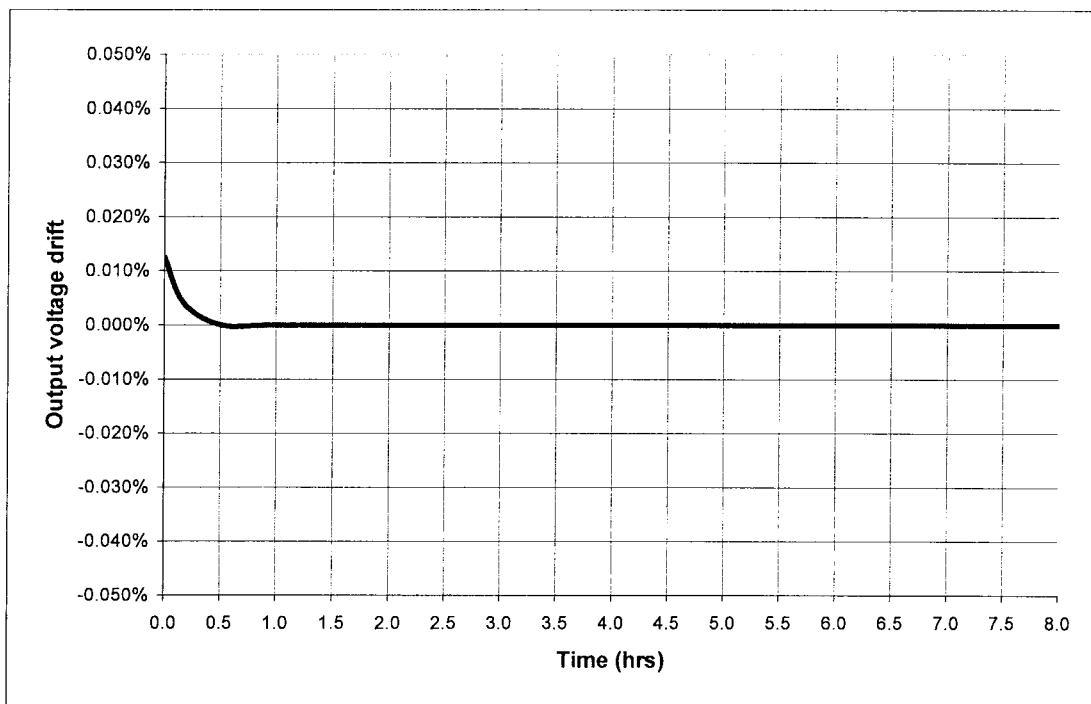
GEN600-8.5 3Φ 400



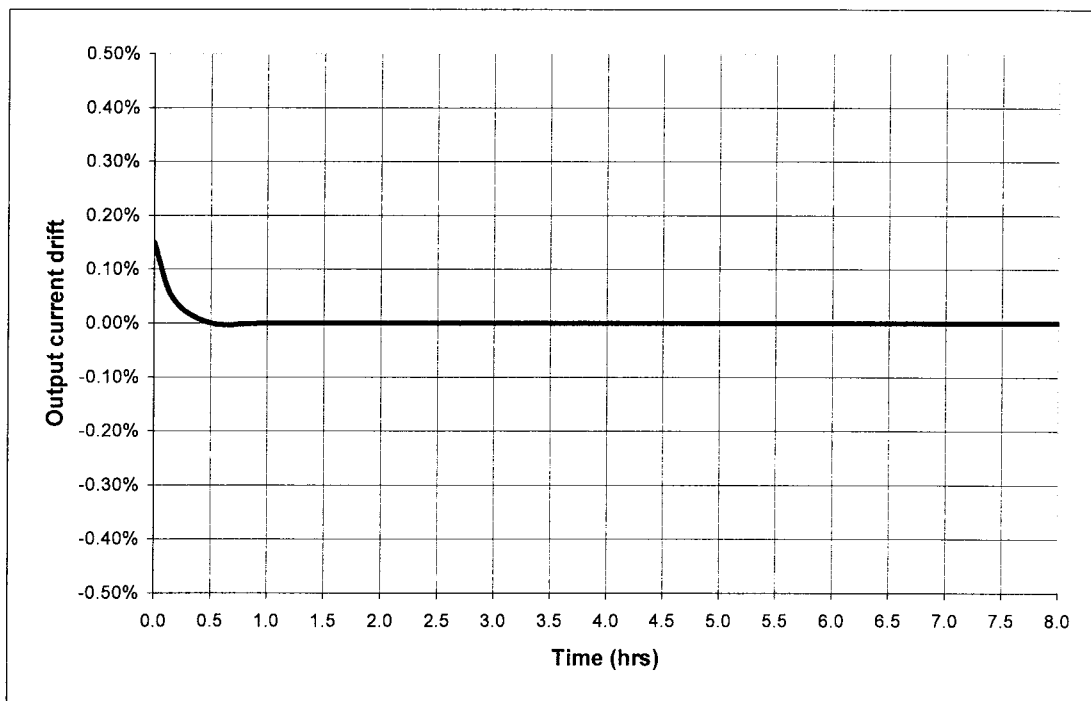
2.2 Warm up drift & stability

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

GEN8-600 C.V mode



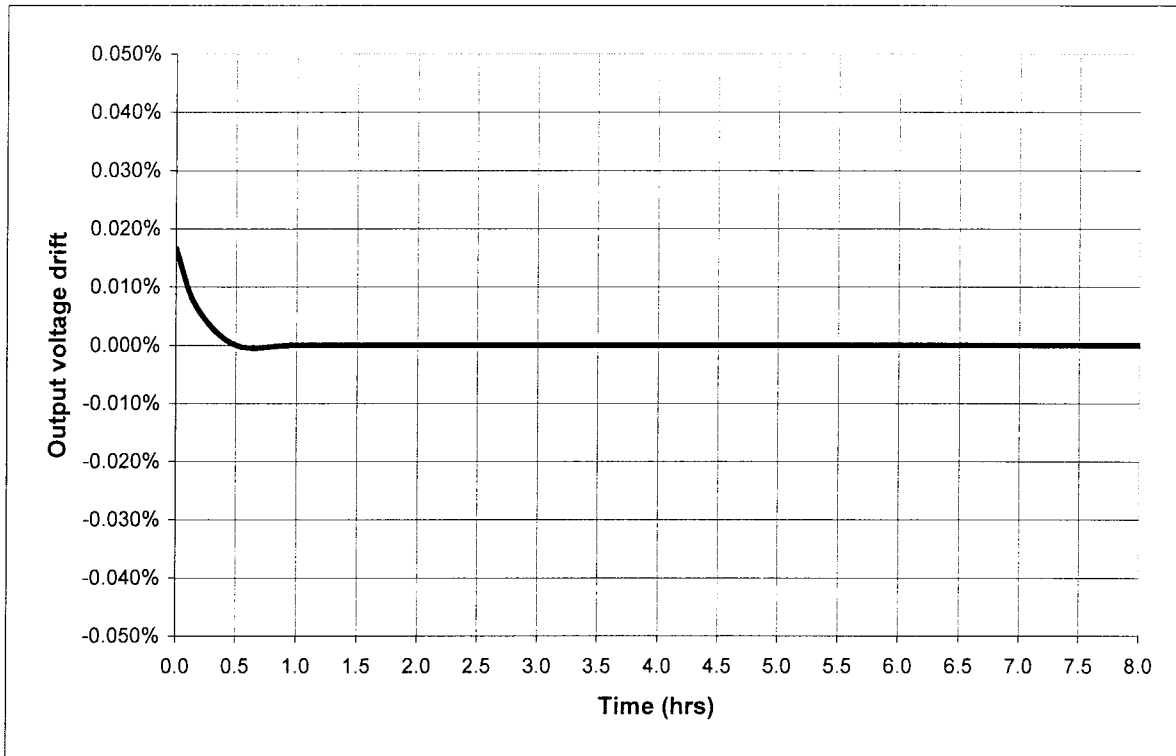
GEN8-600 C.C mode



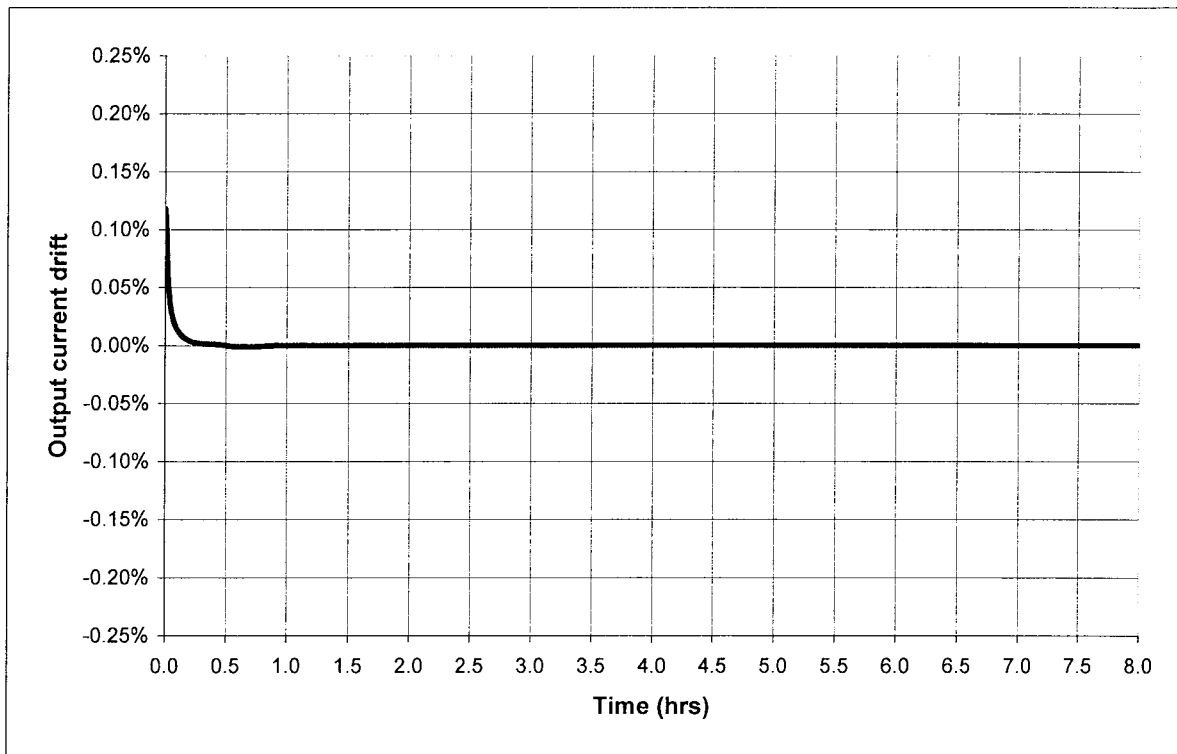
2.2 Warm up drift & stability

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

GEN60-85 C.V mode



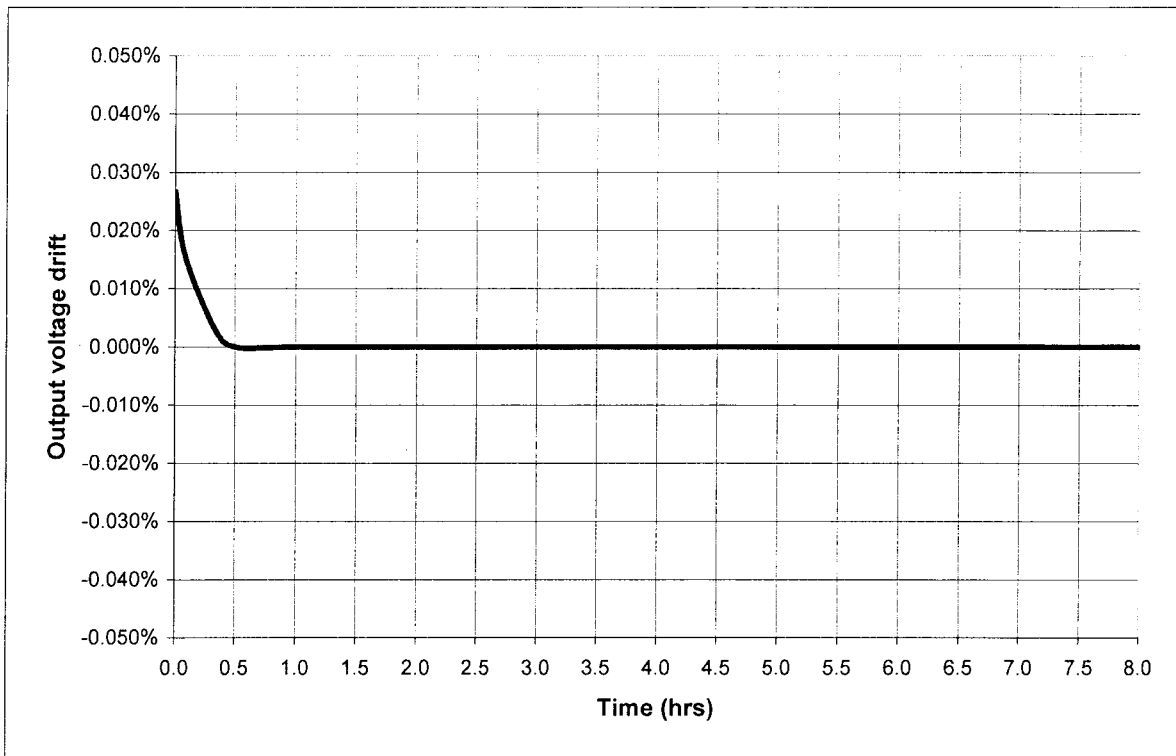
GEN60-85 C.C mode



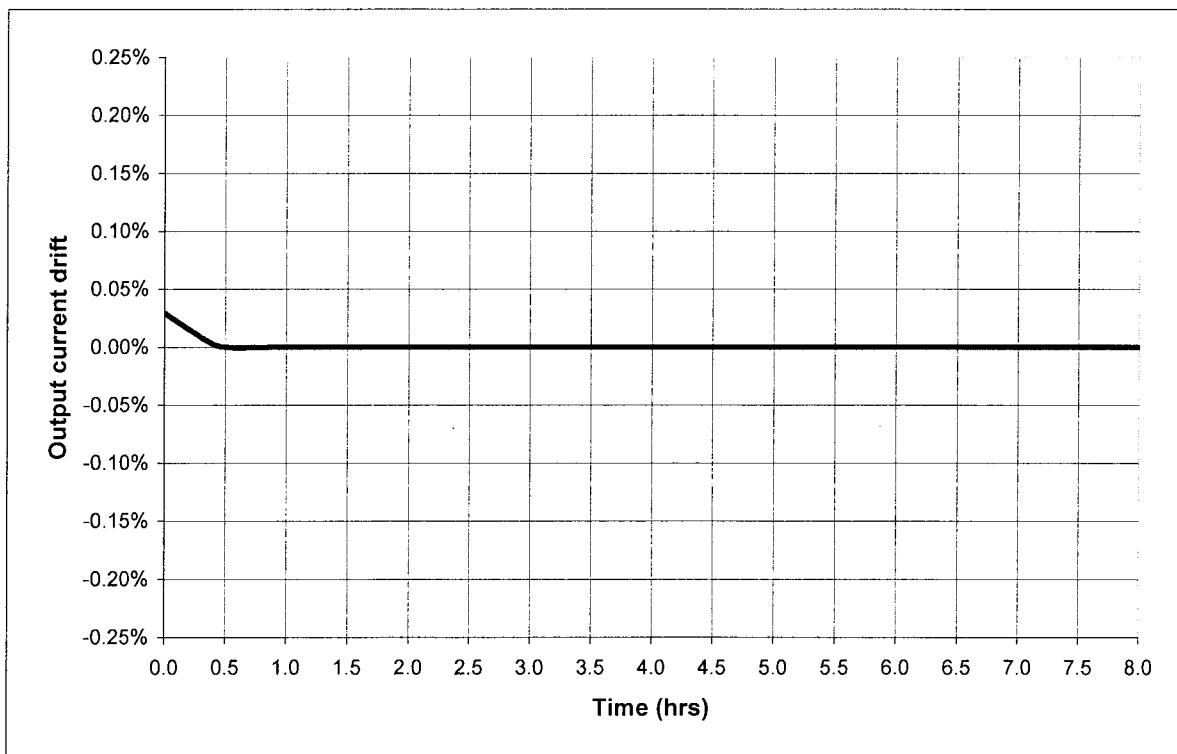
2.2 Warm up drift & stability

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

GEN150-34 C.V mode



GEN150-34 C.C mode



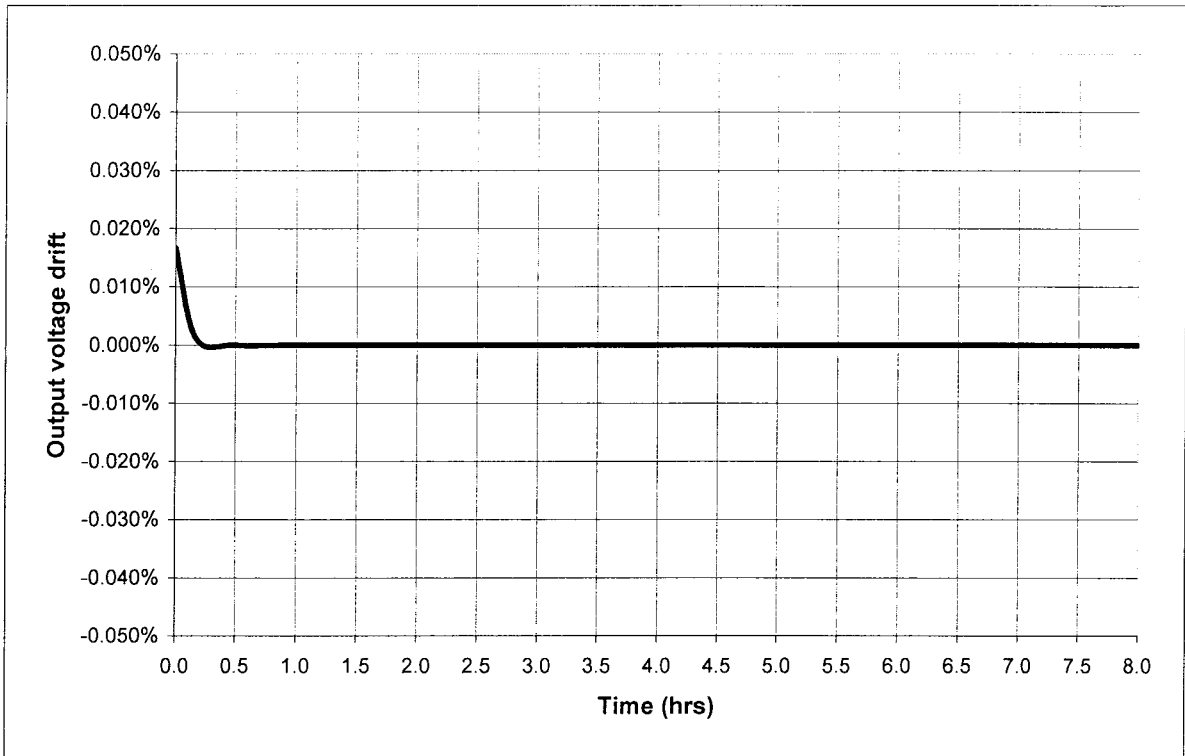
2.2 Warm up drift & stability

Conditions: Vout: 100%

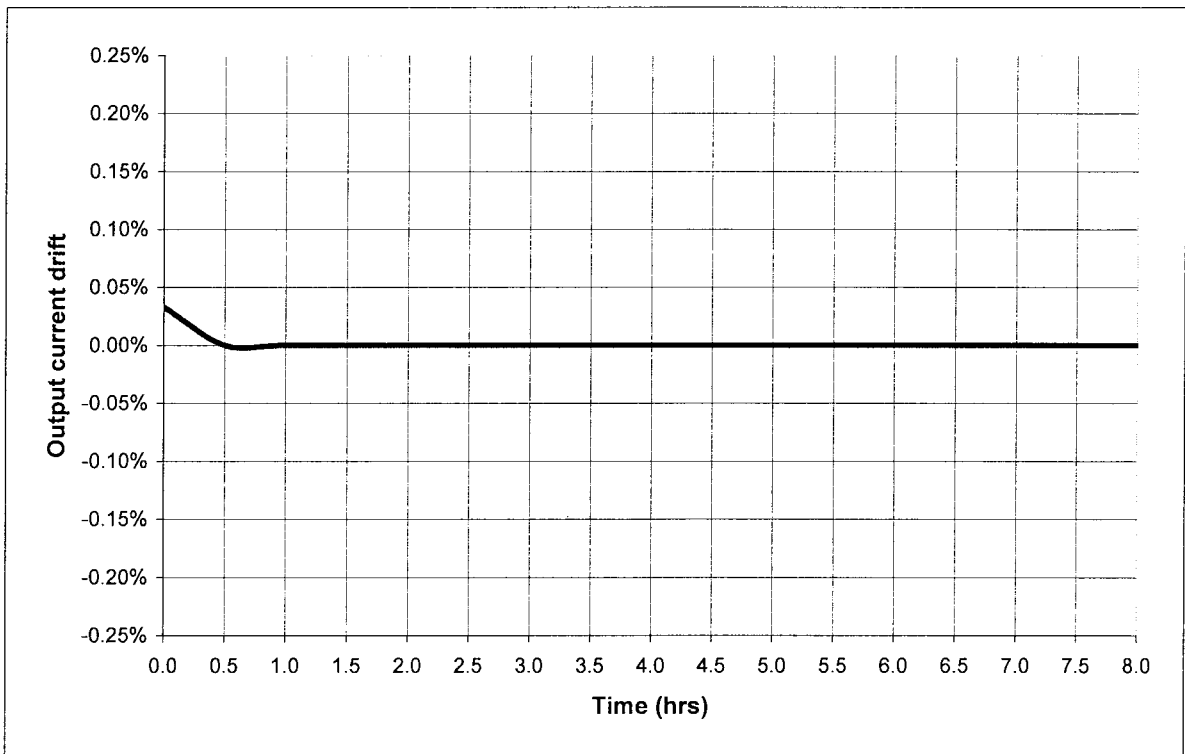
Iout: 100%

Ta = 25°C

GEN600-8.5 C.V mode



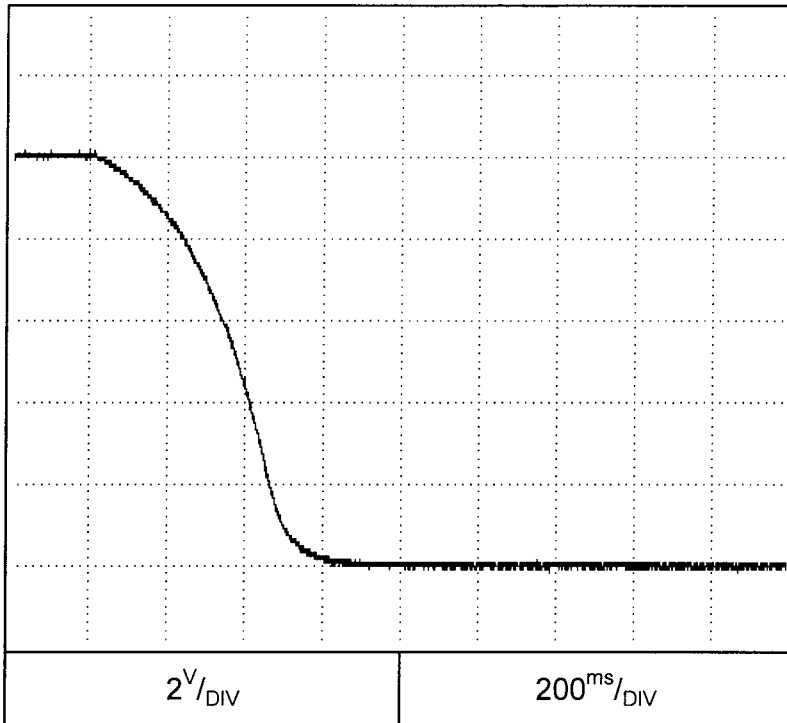
GEN600-8.5 C.C mode



2.3 Over voltage protection (OVP) characteristic

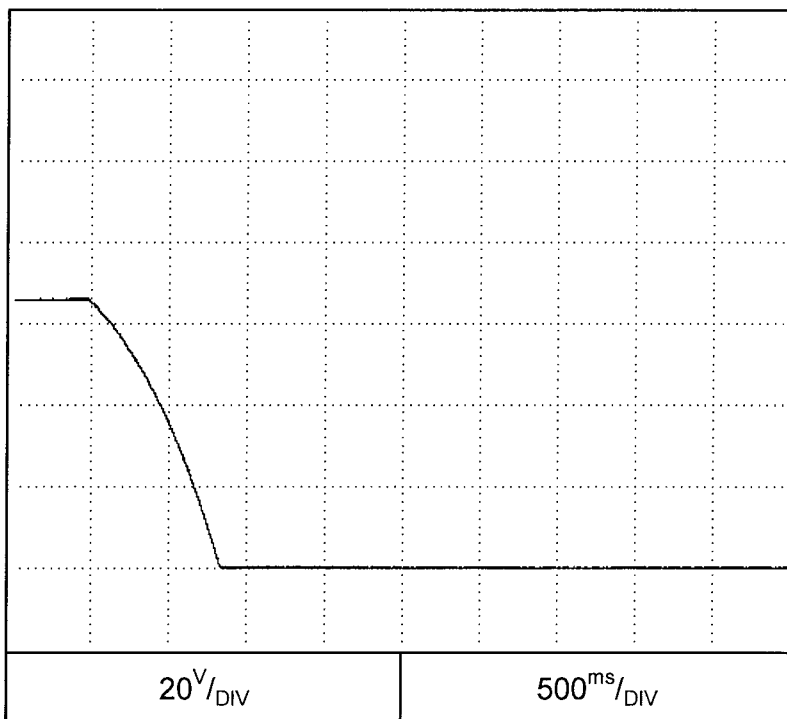
Conditions: Vset: 100%
Iout: 0%
Ta = 25°C

GEN8-600



OVP setting:10V

GEN60-85

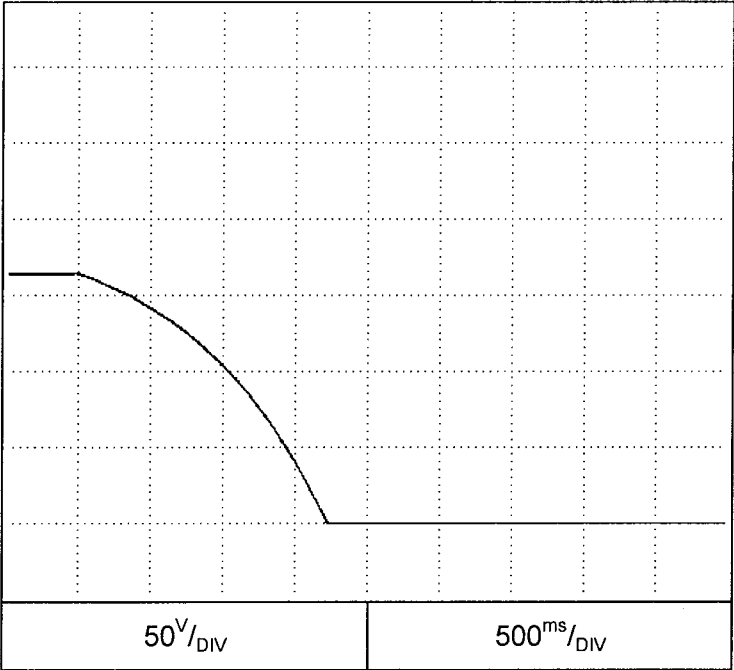


OVP setting:66.15V

2.3 Over voltage protection (OVP) characteristic

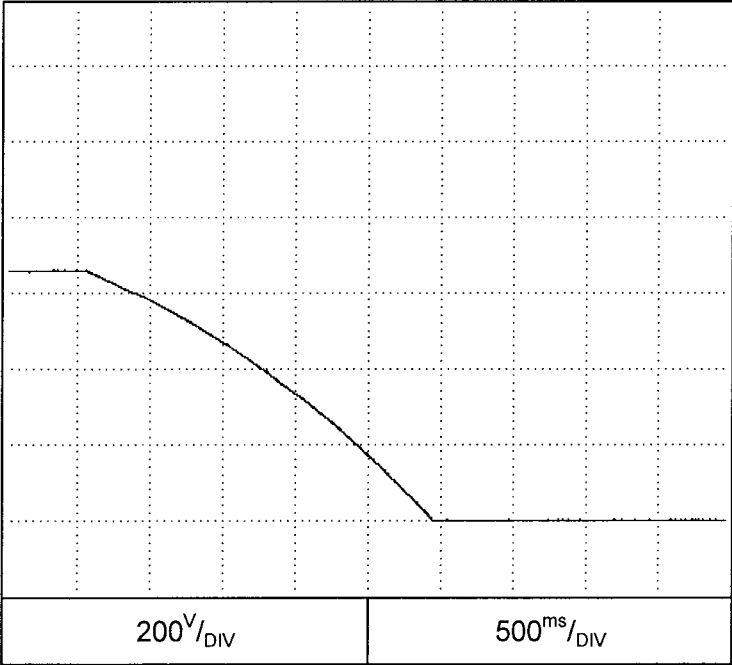
Conditions: Vset: 100%
Iout: 0%
Ta = 25°C

GEN150-34



OVP setting: 165.3V

GEN600-8.5

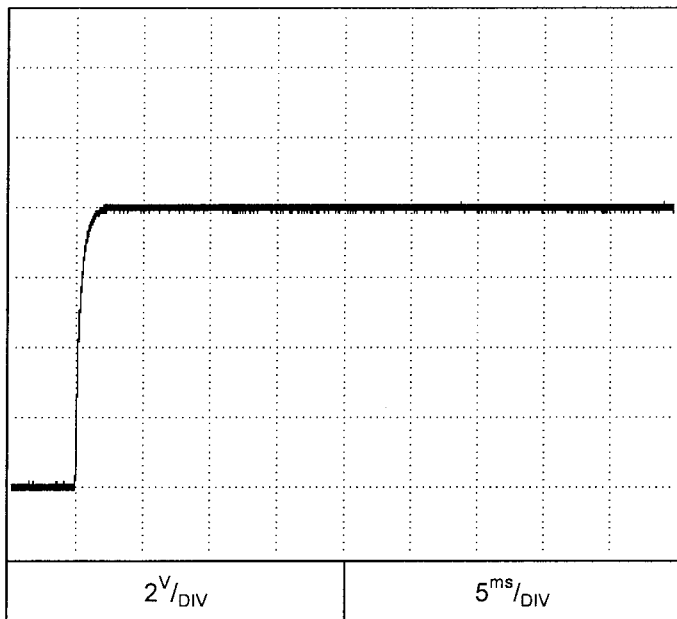


OVP setting: 661.5V

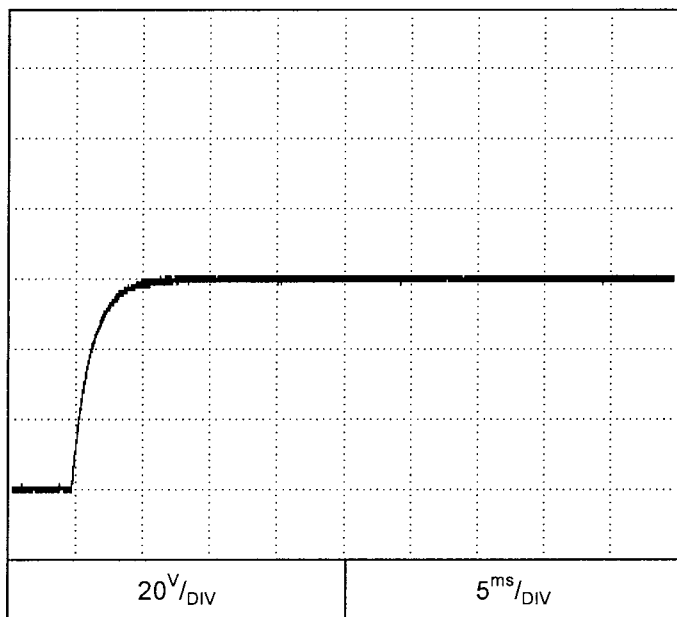
2.4 ON/OFF Output rise characteristics
C.V mode

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

GEN8-600



GEN60-85



2.4 ON/OFF Output rise characteristics

C.V mode

Conditions: Vin:Nominal

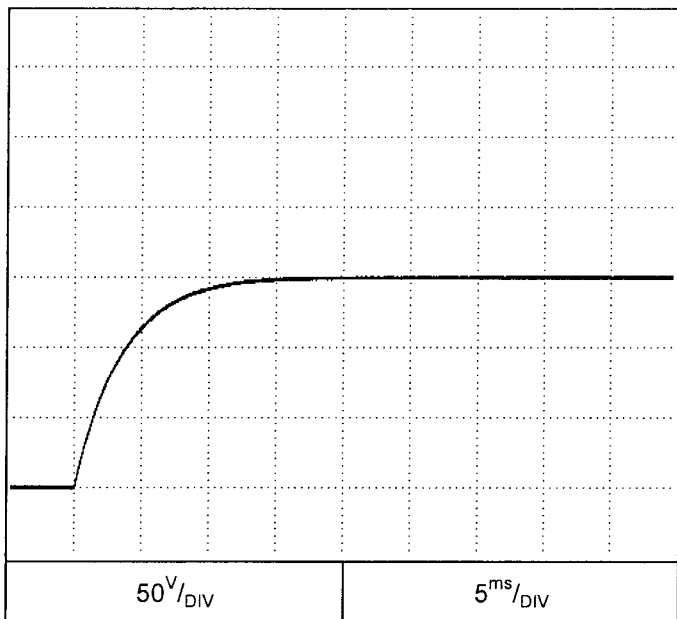
Vout: 100%

Iout: 0%

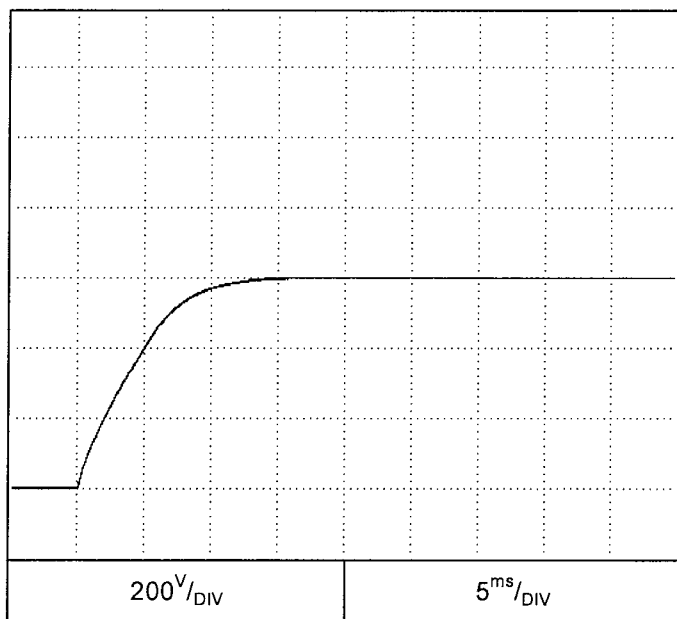
Iset=105%

Ta = 25°C

GEN150-34



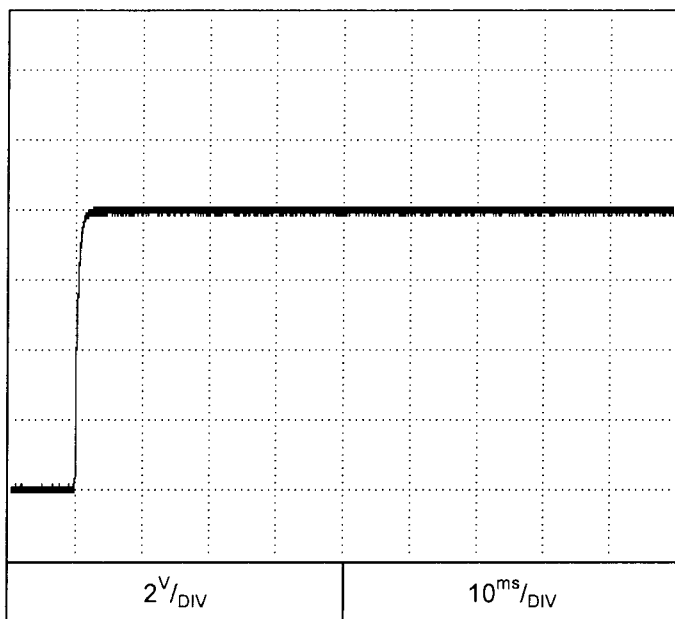
GEN600-8.5



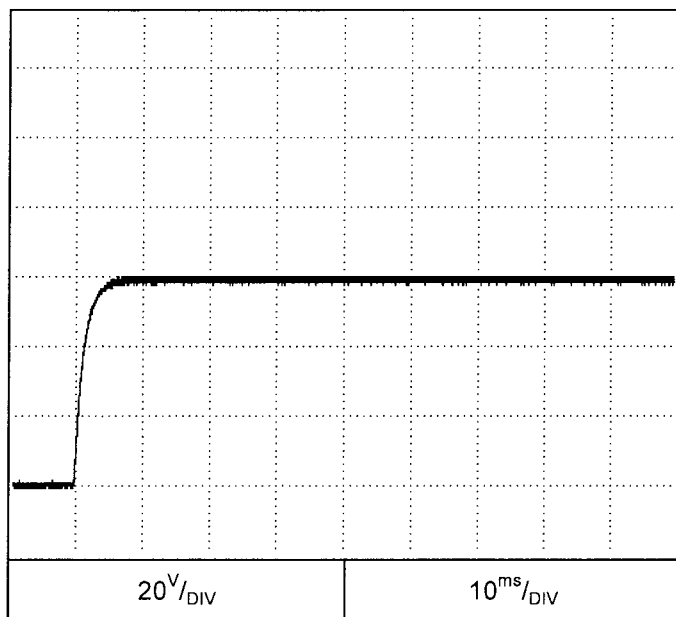
2.4 ON/OFF Output rise characteristics
C.V mode

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

GEN8-600



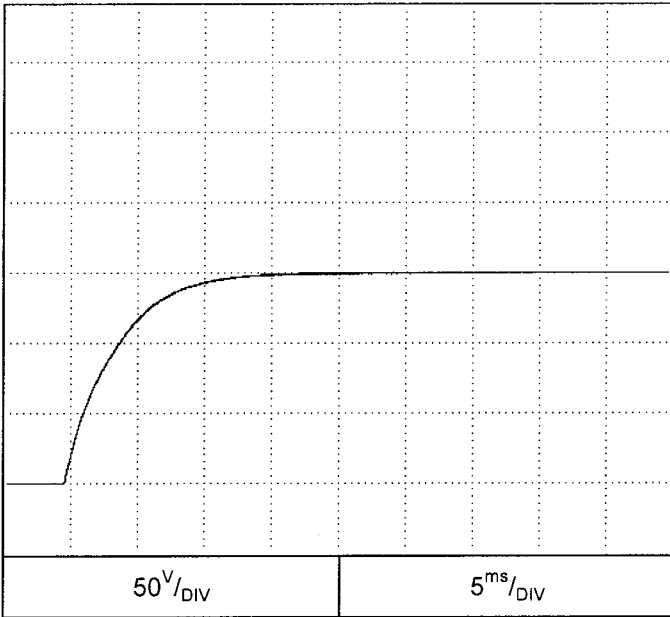
GEN60-85



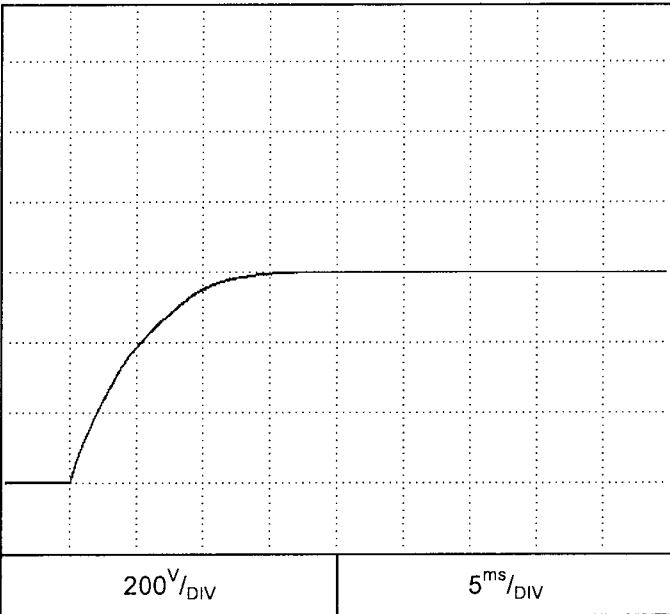
2.4 ON/OFF Output rise characteristics
C.V mode

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

GEN150-34



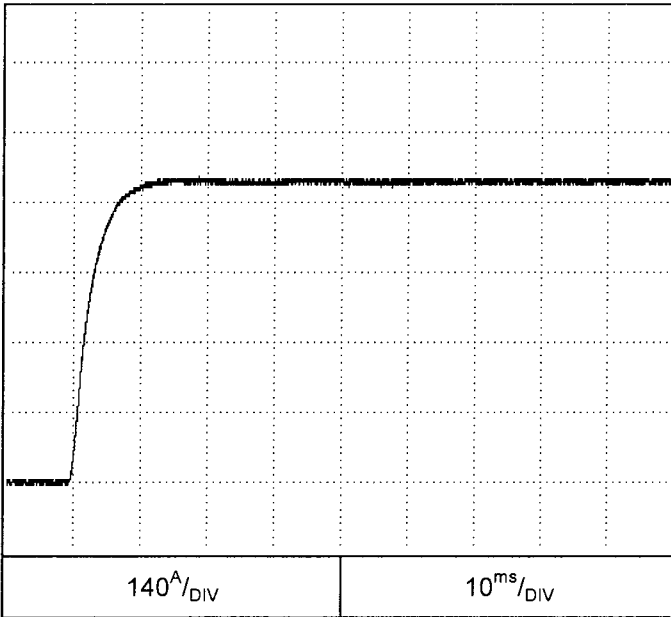
GEN600-8.5



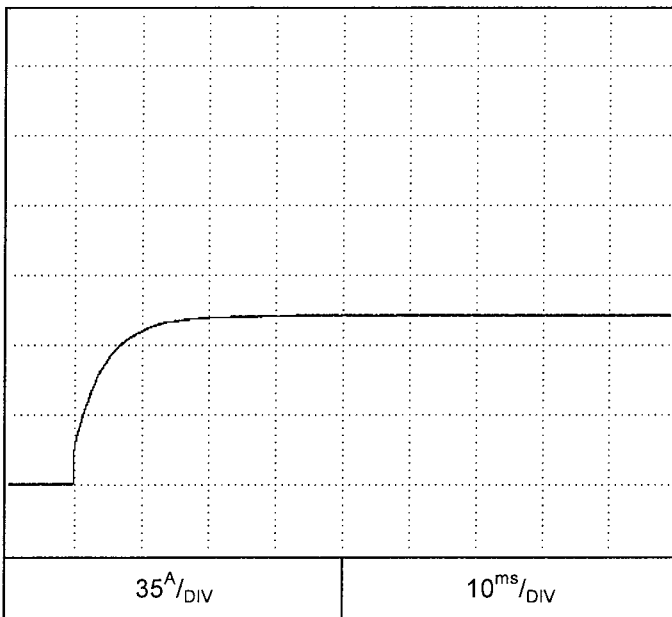
2.4 ON/OFF Output rise characteristics
C.C mode

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

GEN8-600



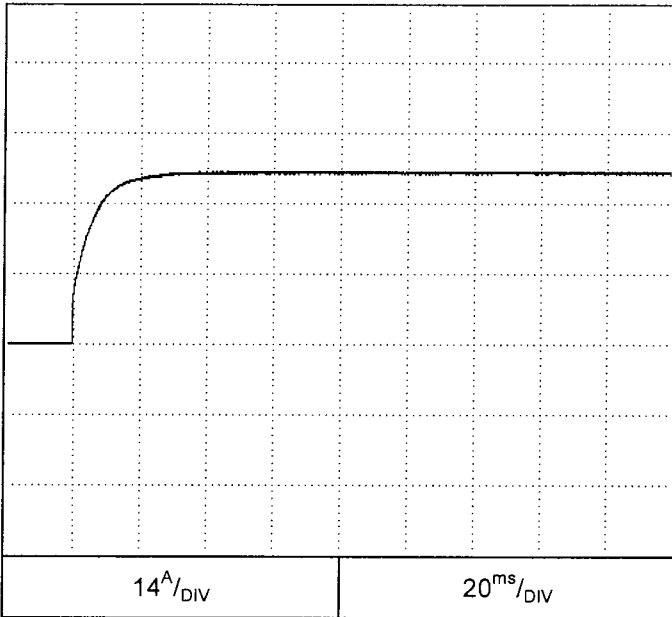
GEN60-85



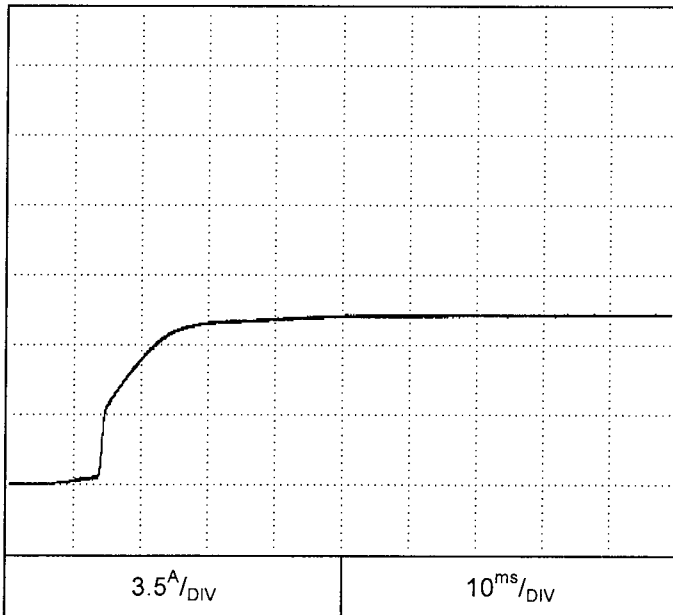
2.4 ON/OFF Output rise characteristics
C.C mode

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

GEN150-34



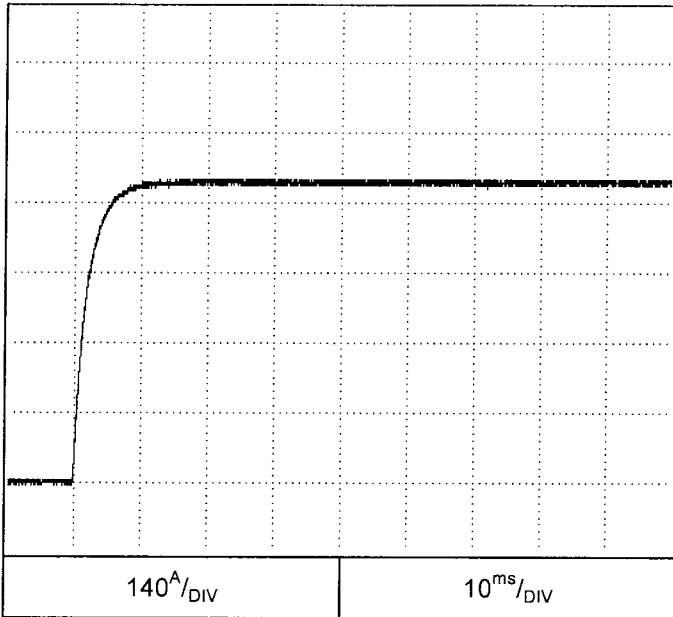
GEN600-8.5



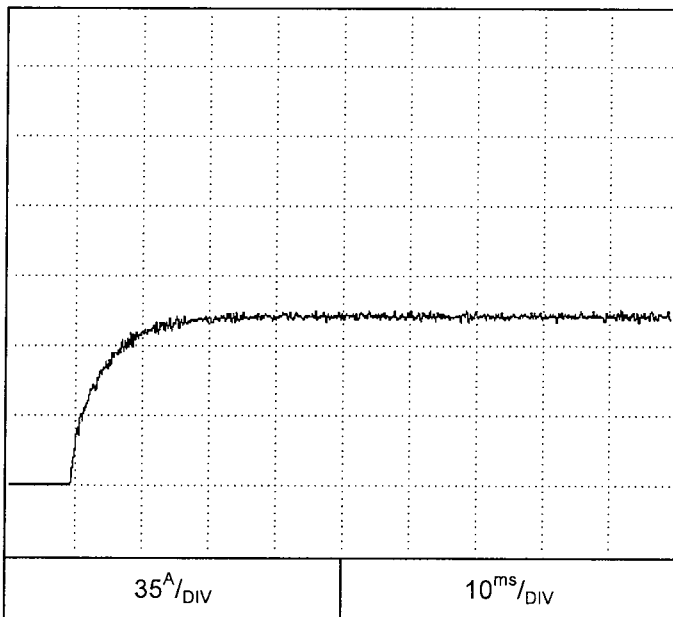
2.4 ON/OFF Output rise characteristics
C.C mode

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

GEN8-600



GEN60-85

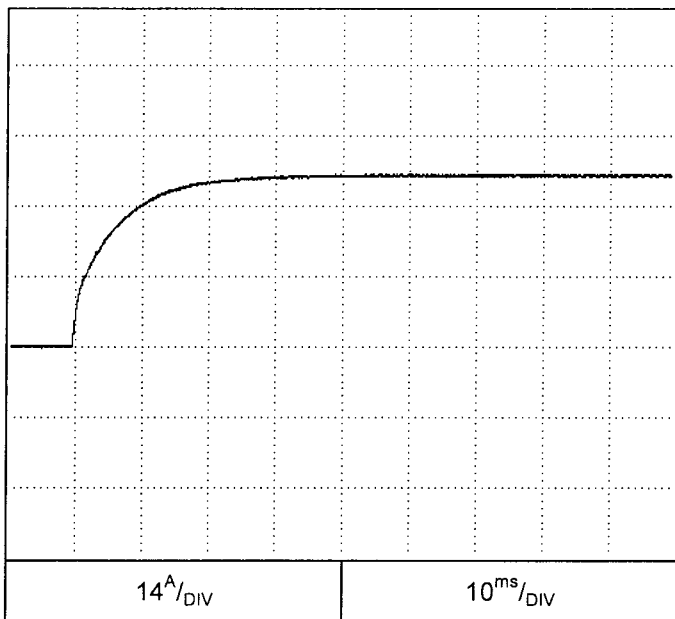


2.4 ON/OFF Output rise characteristics

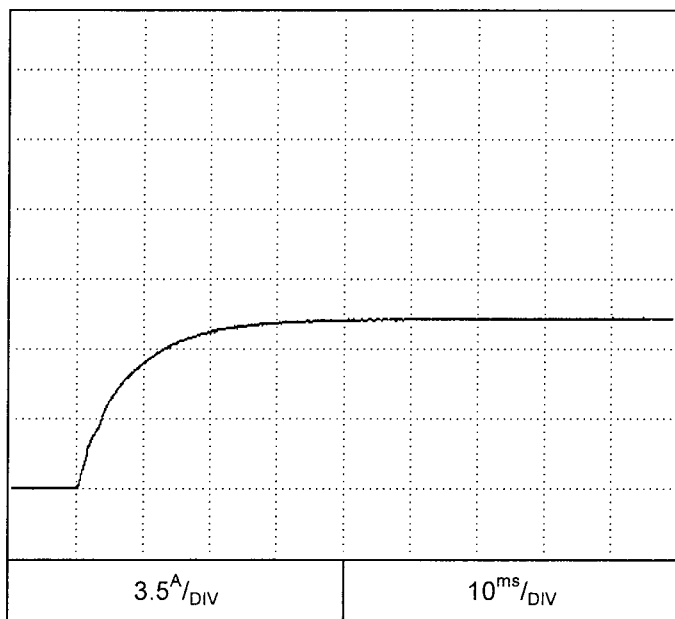
C.C mode

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

GEN150-34



GEN600-8.5



2.5 ON/OFF Output fall characteristics

C.V mode

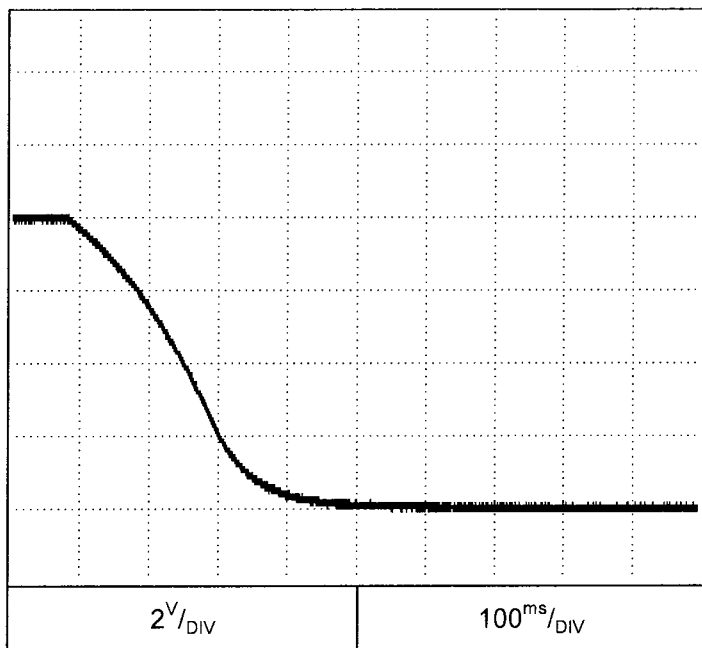
Conditions: Vin:Nominal

Vout: 100%

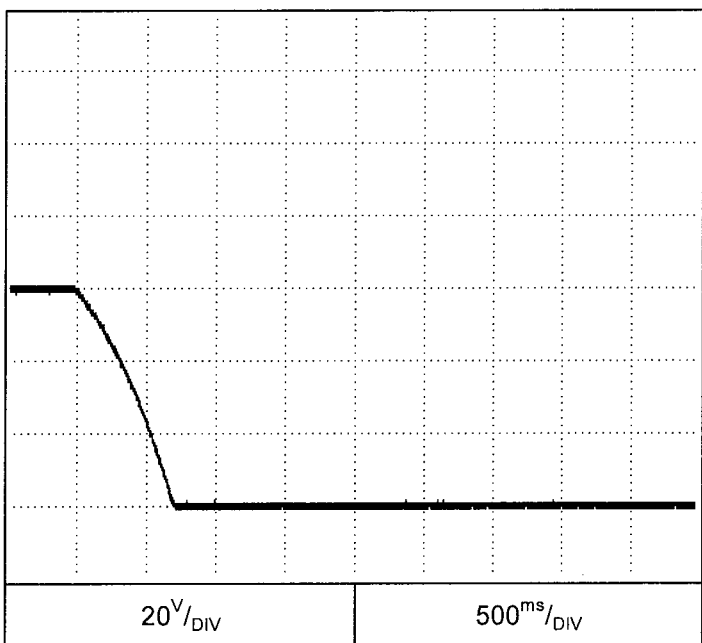
Iout: 0%

Ta = 25°C

GEN8-600



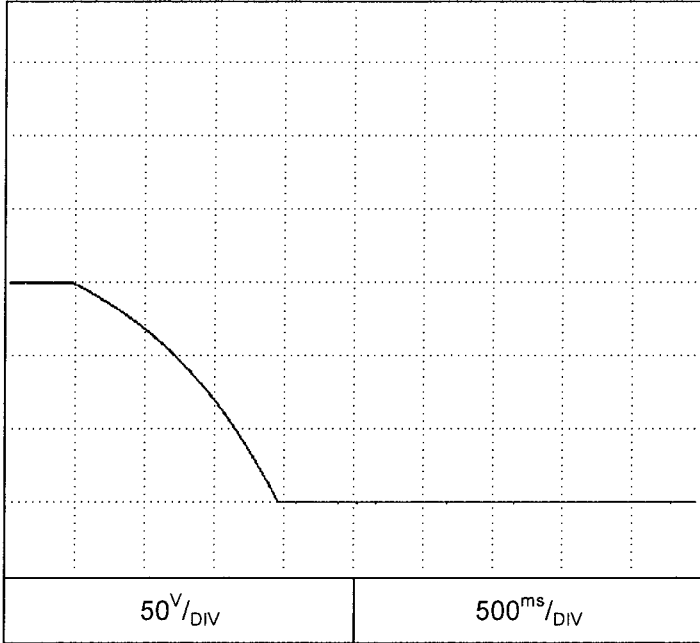
GEN60-85



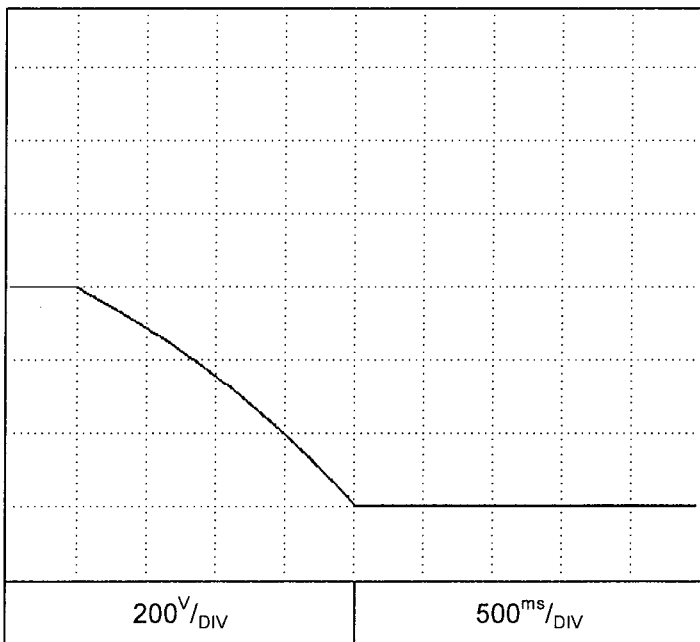
2.5 ON/OFF Output fall characteristics
C.V mode

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

GEN150-34



GEN600-8.5



2.5 ON/OFF Output fall characteristics

C.V mode

Conditions: Vin:Nominal

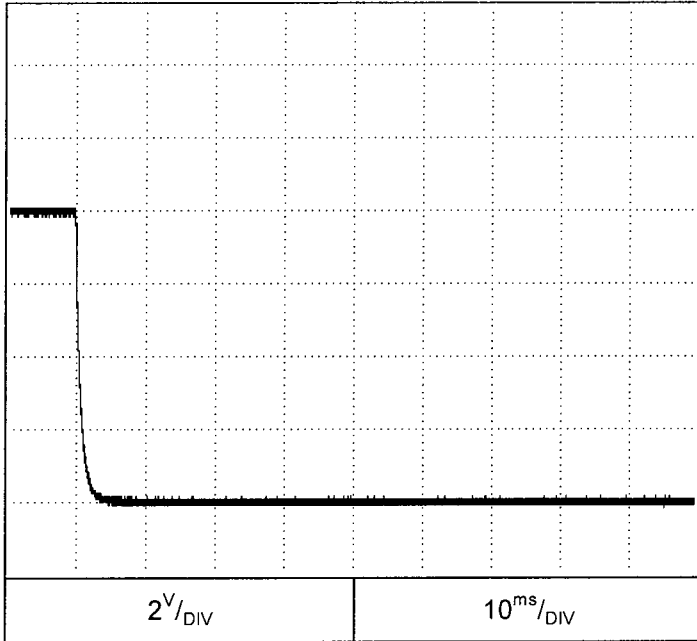
Vout: 100%

Iout: 100%

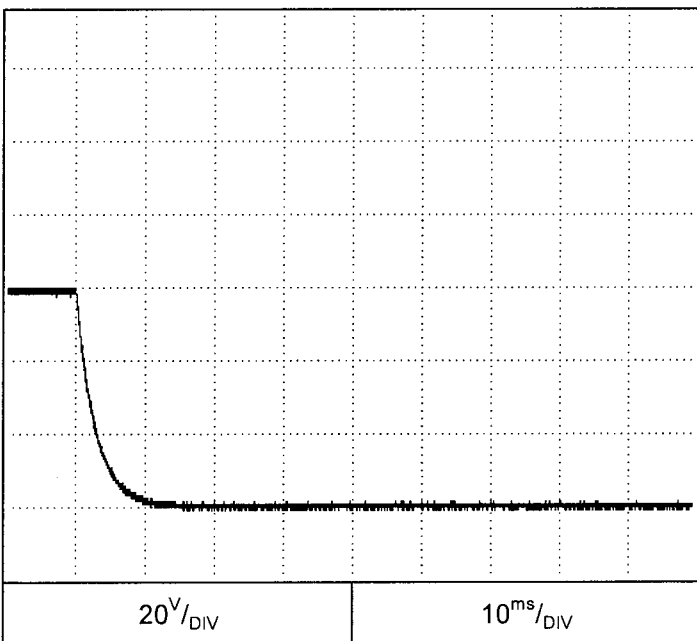
Load: CR

Ta = 25°C

GEN8-600



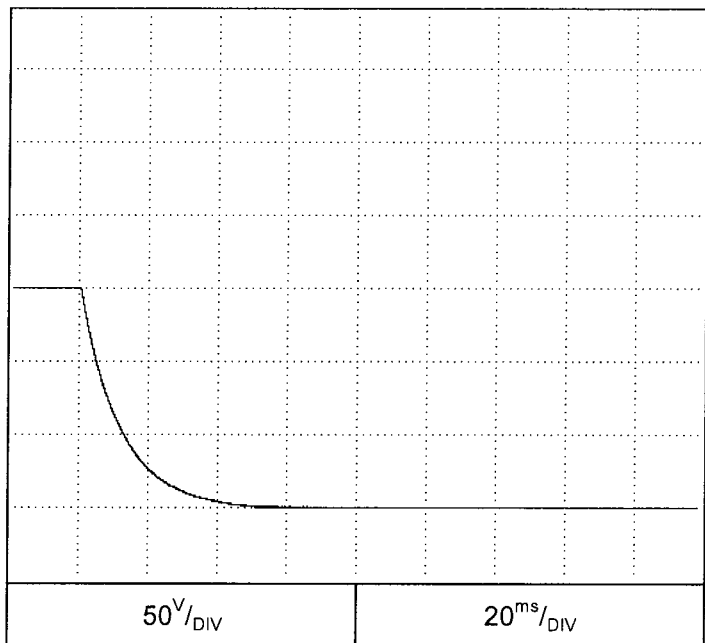
GEN60-85



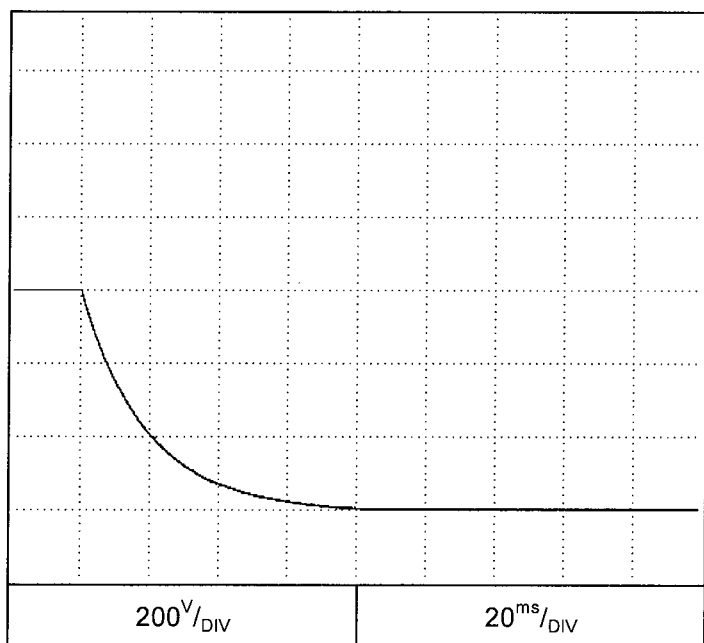
2.5 ON/OFF Output fall characteristics
C.V mode

Conditions: Vin:Nominal
Vout: 100%
Iout: 100%
Load: CR
Ta = 25°C

GEN150-34



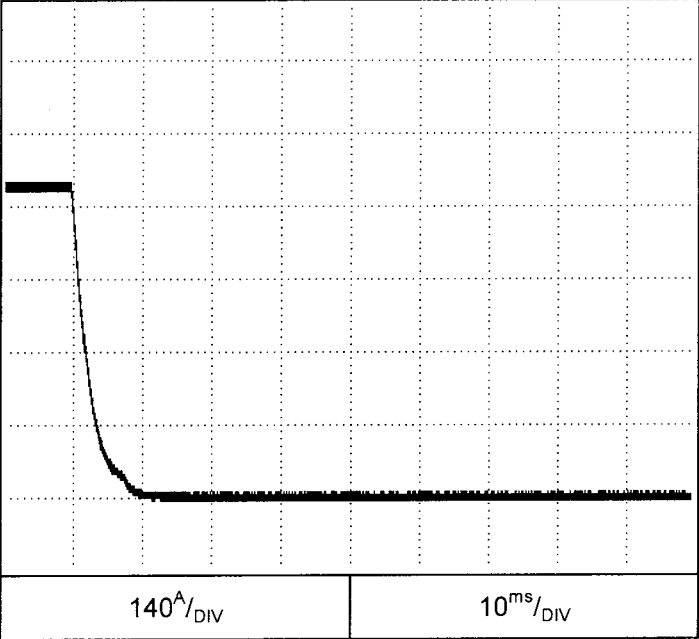
GEN600-8.5



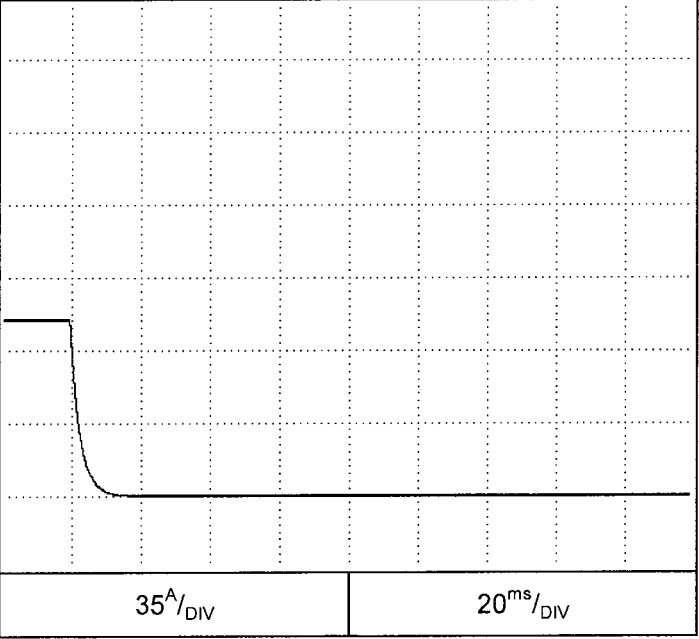
2.5 ON/OFF Output fall characteristics
C.C mode

Conditions: Vin:Nominal
Vout: 100%
Iout: 100%
Load: CR
Ta = 25°C

GEN8-600



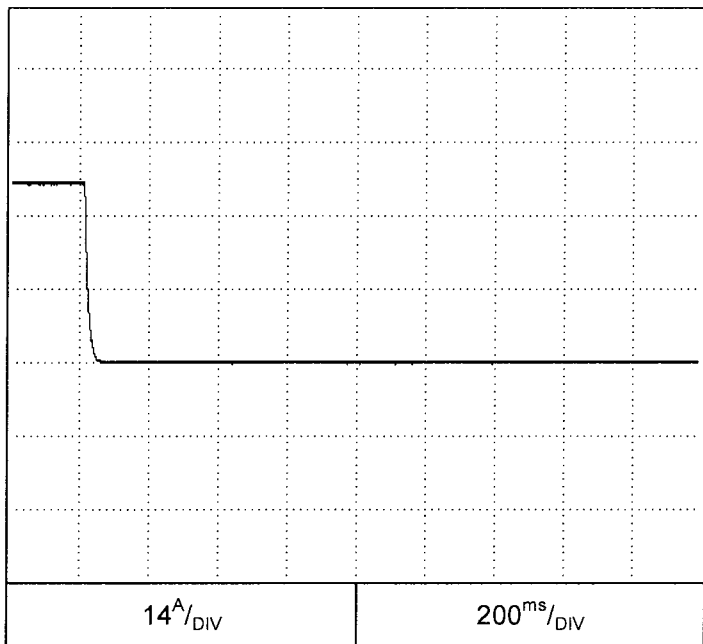
GEN60-85



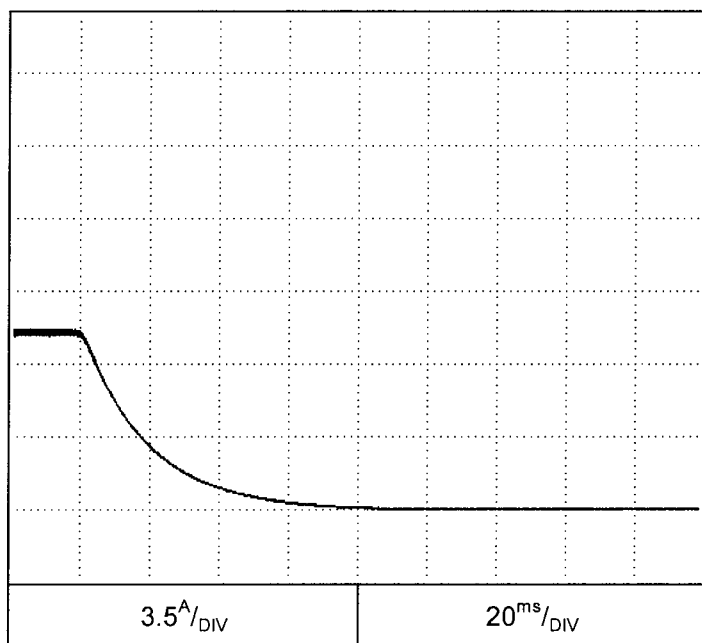
2.5 ON/OFF Output fall characteristics
C.C mode

Conditions: Vin:Nominal
Vout: 100%
Iout: 100%
Load: CR
Ta = 25°C

GEN150-34



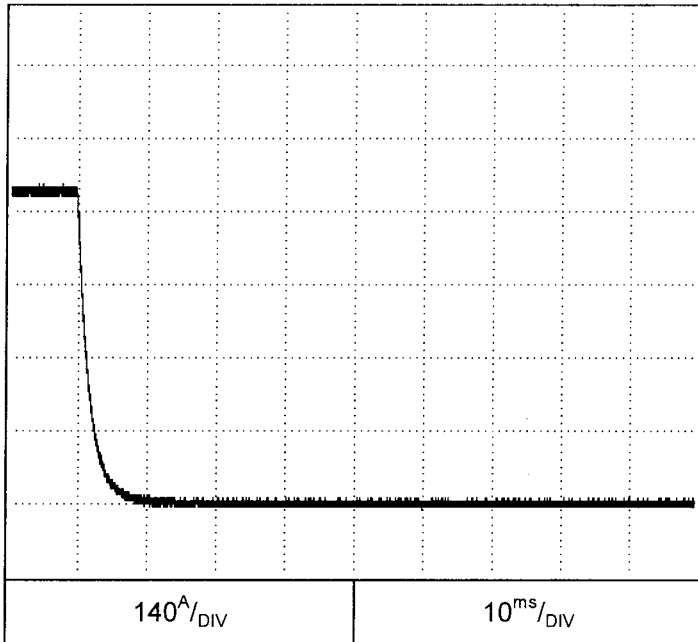
GEN600-8.5



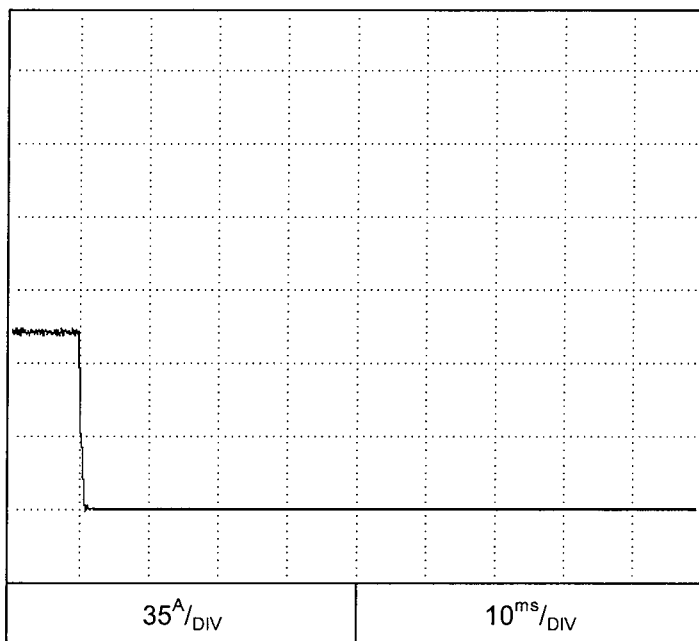
2.5 ON/OFF Output fall characteristics
C.C mode

Conditions: Vin:Nominal
Iout: 100%
shorted output
Ta = 25°C

GEN8-600



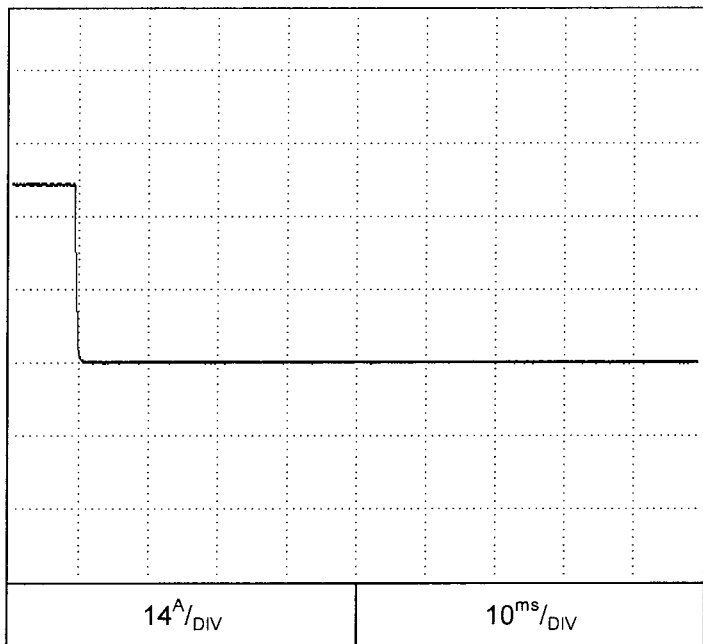
GEN60-85



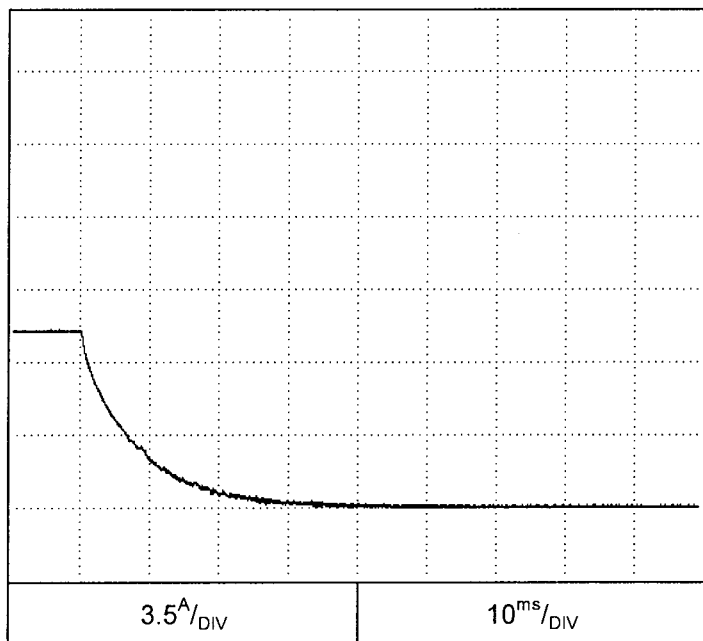
2.5 ON/OFF Output fall characteristics
C.C mode

Conditions: Vin:Nominal
Iout: 100%
shorted output
Ta = 25°C

GEN150-34



GEN600-8.5

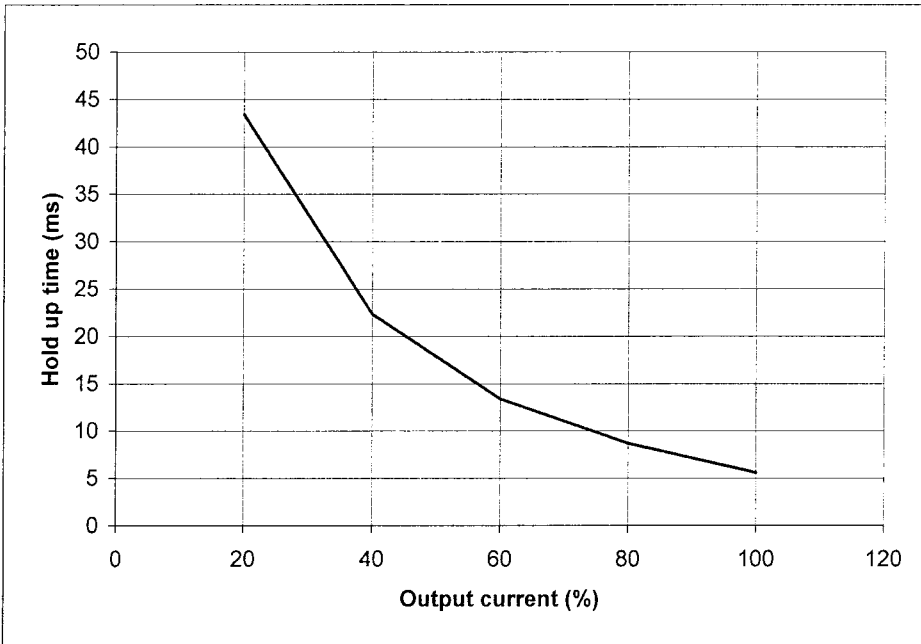


2.6 Holdup time characteristics

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

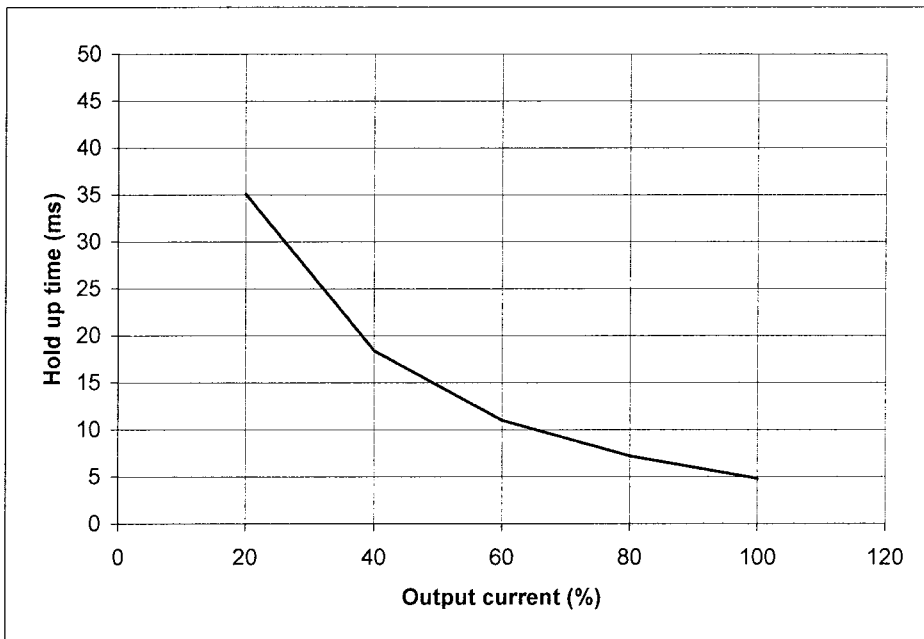
GEN8-600 3 Φ 200

$V_{in}: 208\text{VAC}$



GEN8-600 3 Φ 400

$V_{in}: 400\text{VAC}$

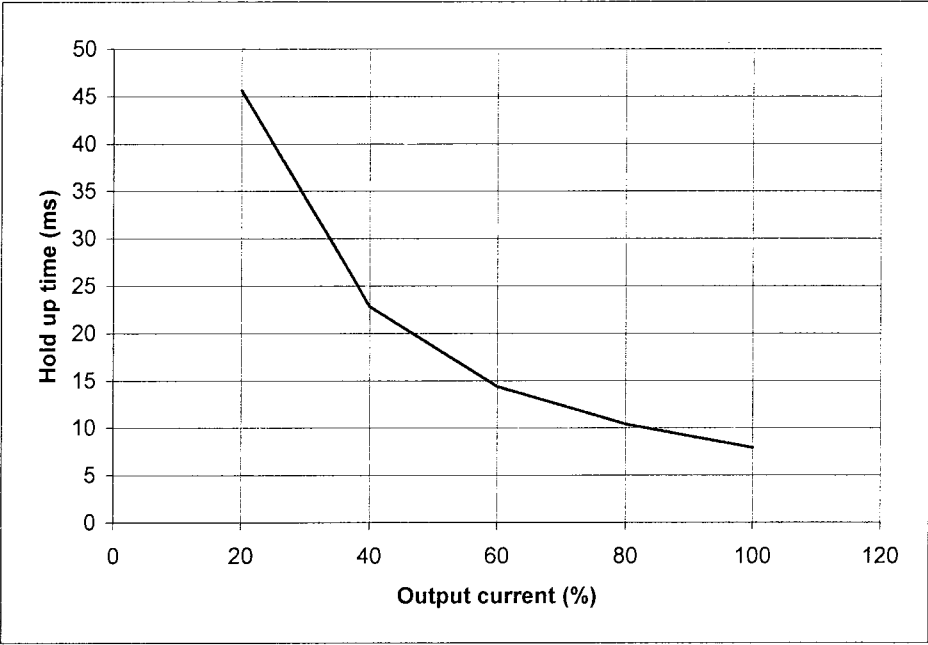


2.6 Holdup time characteristics

Conditions: Ta = 25°C
Vout:100%

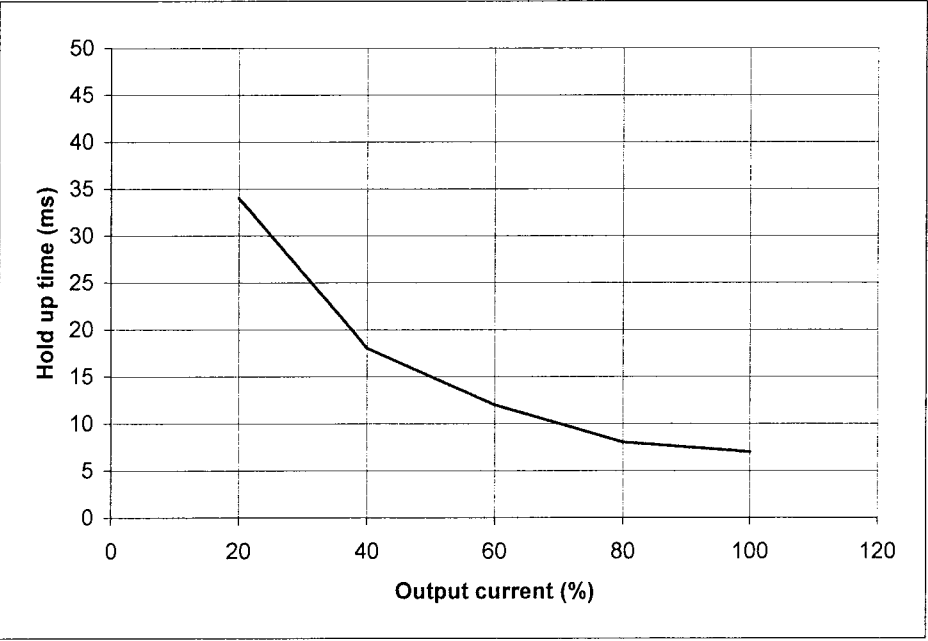
GEN60-85 3Φ 200

Vin:208VAC



GEN60-85 3Φ 400

Vin:400VAC

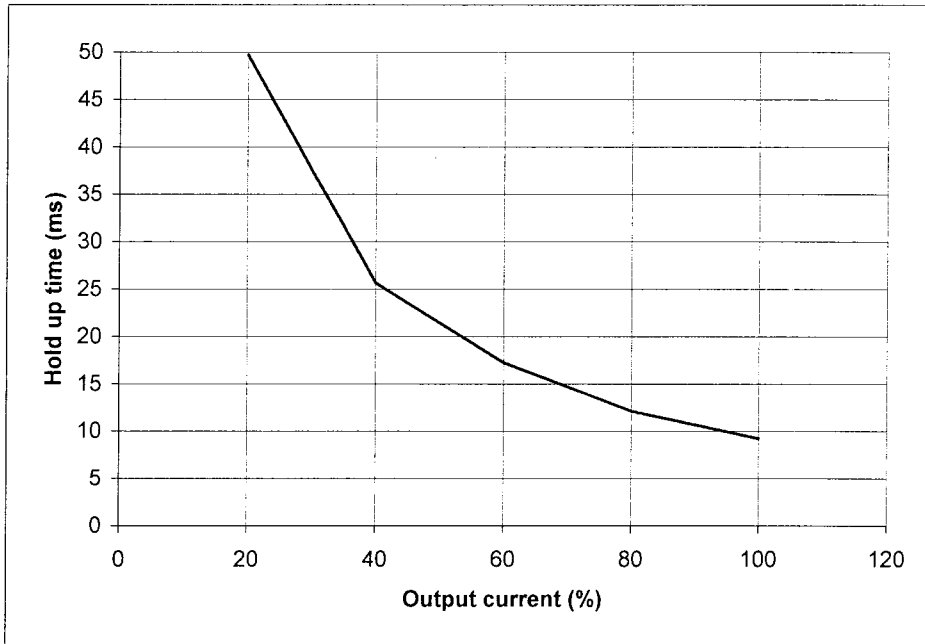


2.6 Holdup time characteristics

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

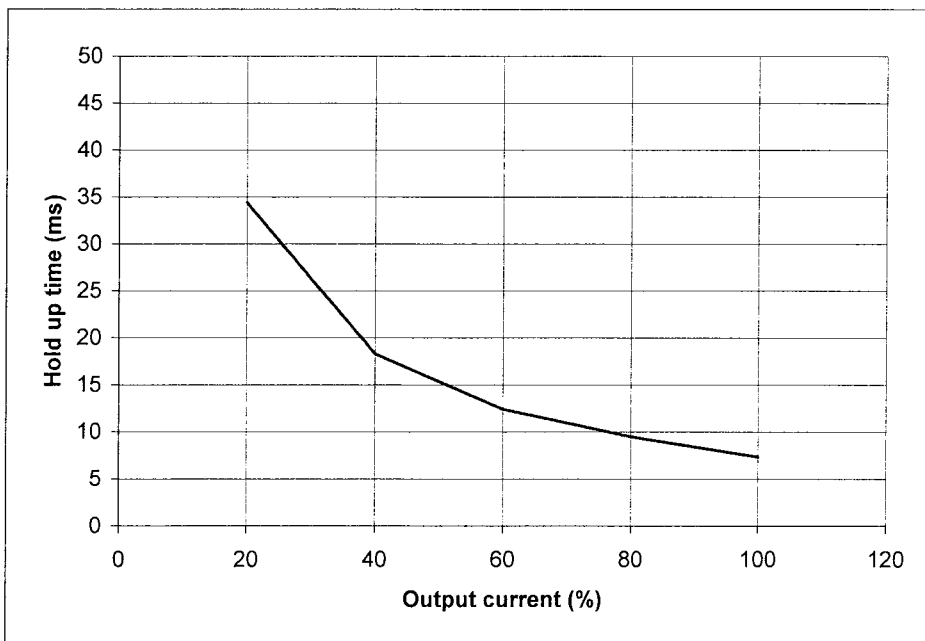
GEN150-34 3 Φ 200

$V_{in}: 208\text{VAC}$



GEN150-34 3 Φ 400

$V_{in}: 400\text{VAC}$

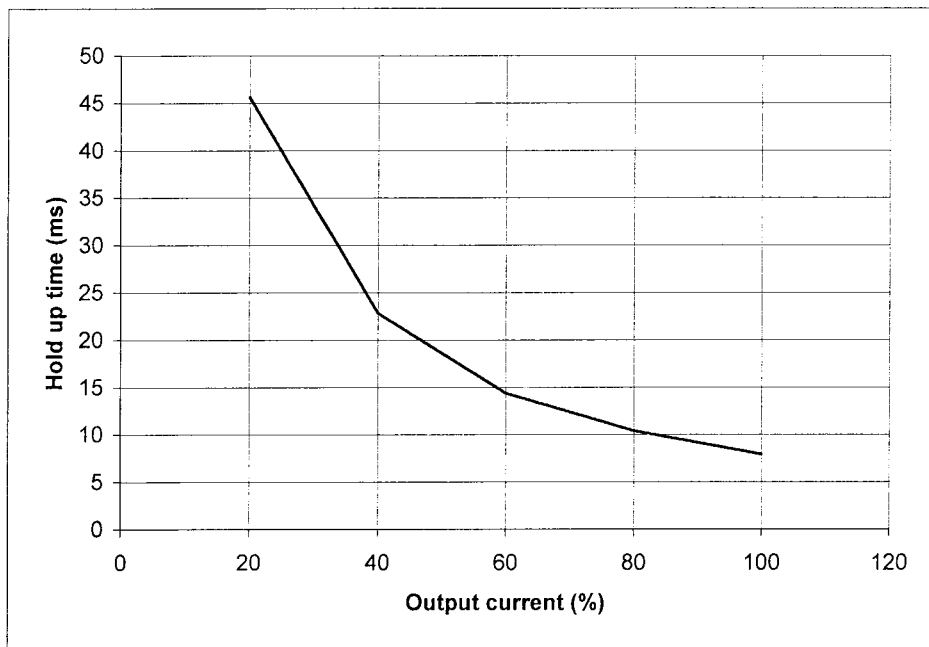


2.6 Holdup time characteristics

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

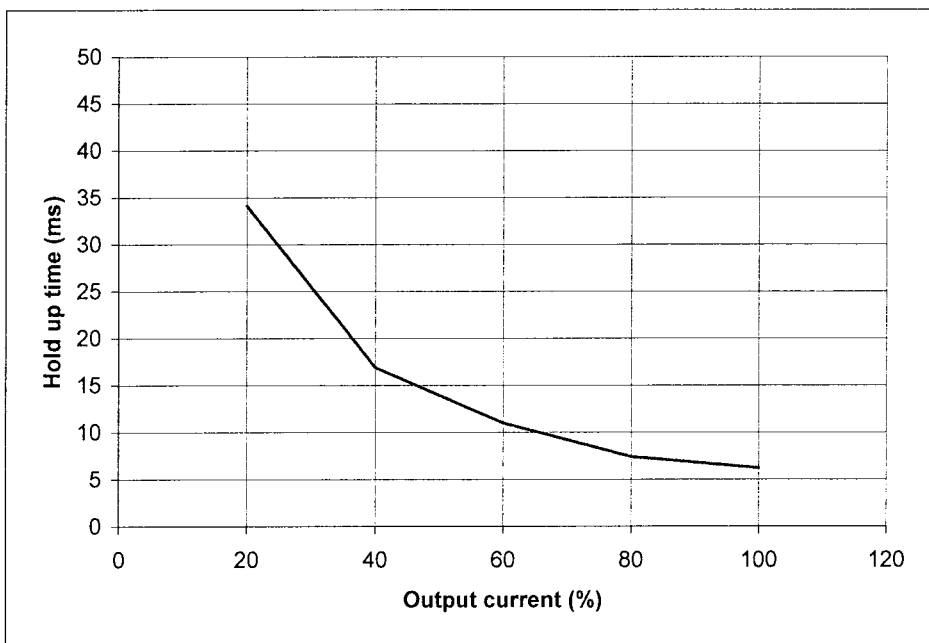
GEN600-8.5 3 Φ 200

$V_{in}: 208\text{VAC}$



GEN600-8.5 3 Φ 400

$V_{in}: 400\text{VAC}$



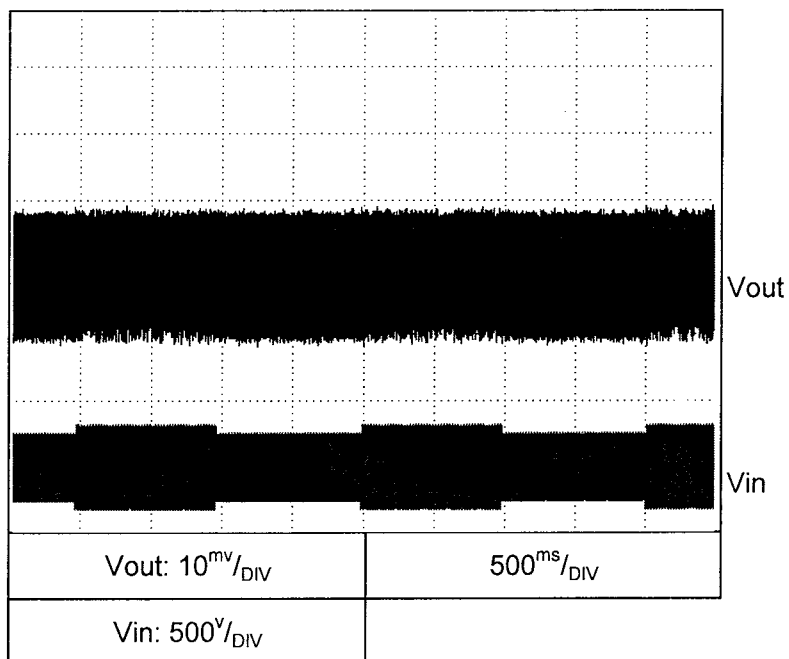
Ta = 25°C

2.7 Dynamic line response characteristics

C.V mode

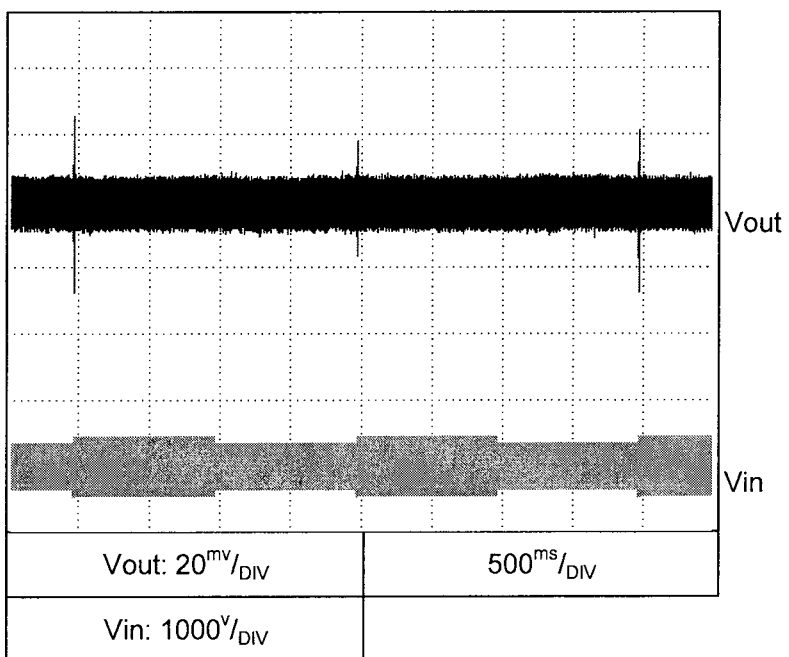
GEN8-600 3Φ 200

Conditions: Vout: 100%
Iout: 100%
Vin: 170↔265V



GEN8-600 3Φ 400

Conditions: Vout: 100%
Iout: 100%
Vin: 342↔460V



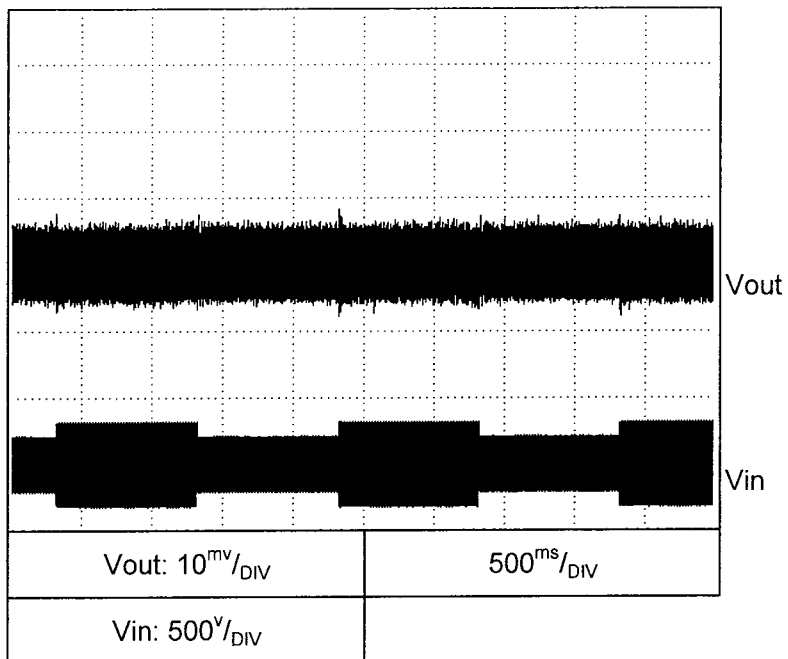
2.7 Dynamic line response characteristics

Ta = 25°C

C.V mode

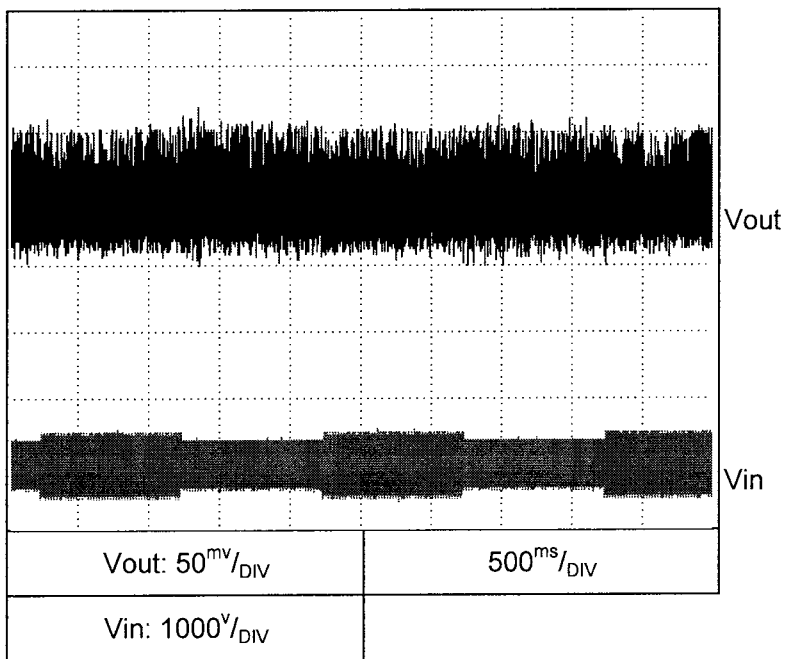
GEN60-85 3Φ 200

Conditions: Vout: 100%
Iout: 100%
Vin: 170↔265V



GEN60-85 3Φ 400

Conditions: Vout: 100%
Iout: 100%
Vin: 342↔460V



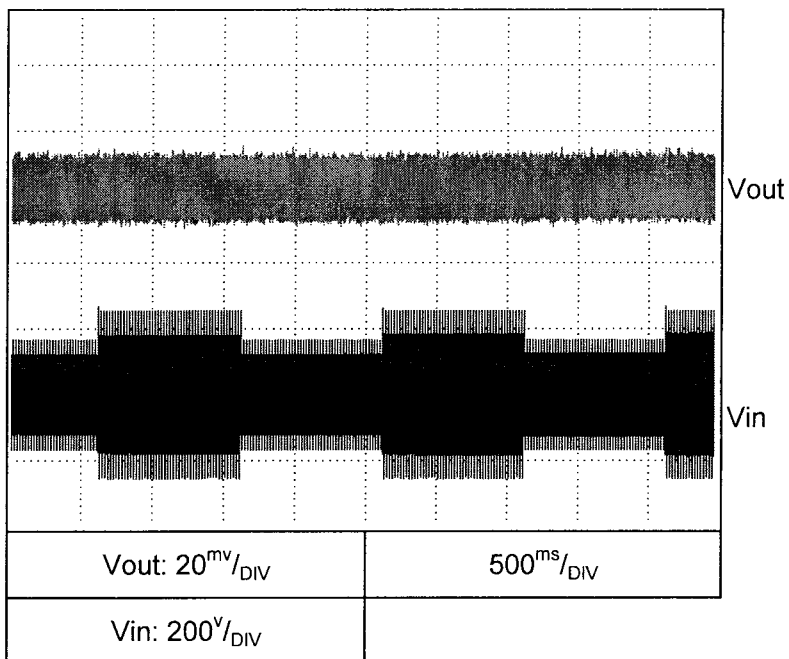
2.7 Dynamic line response characteristics

C.V mode

Ta = 25°C

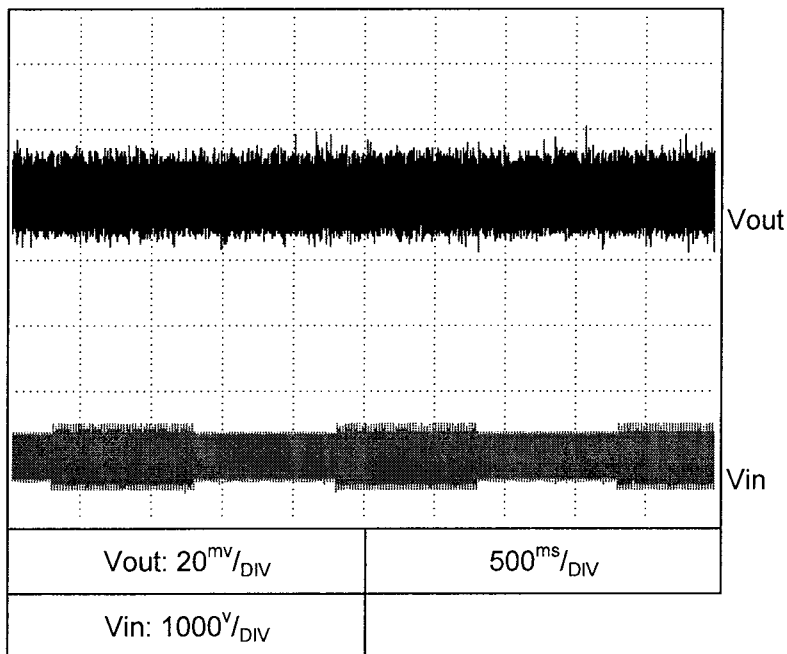
GEN150-34 3Φ 200

Conditions: Vout: 100%
Iout: 100%
Vin: 170↔265V



GEN150-34 3Φ 400

Conditions: Vout: 100%
Iout: 100%
Vin: 342↔460V



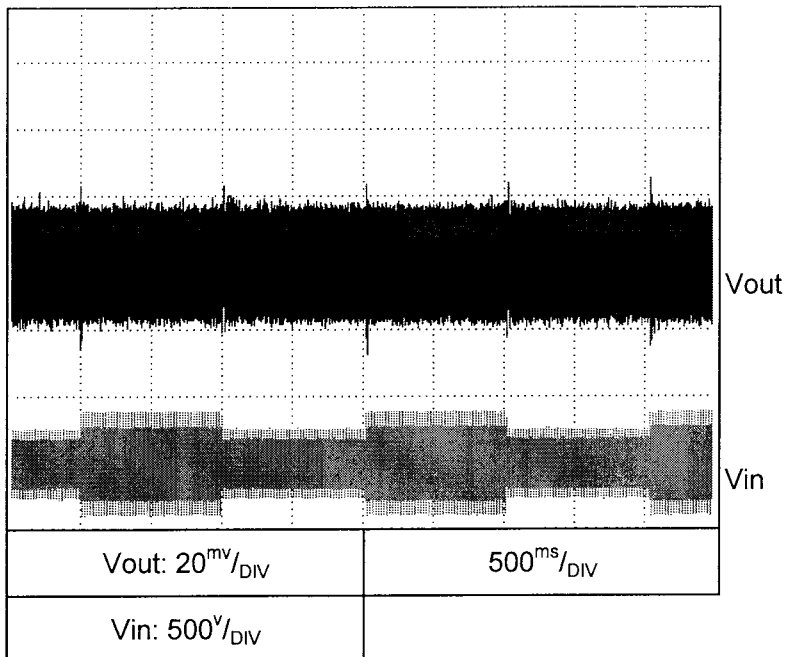
2.7 Dynamic line response characteristics

C.V mode

Ta = 25°C

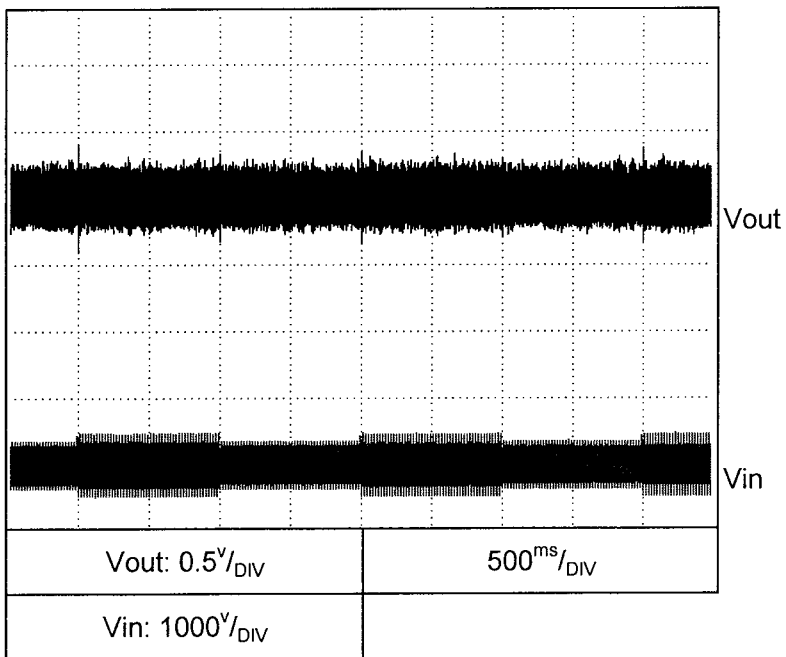
GEN600-8.5 3Φ 200

Conditions: Vout: 100%
Iout: 100%
Vin: 170↔265V



GEN600-8.5 3Φ 400

Conditions: Vout: 100%
Iout: 100%
Vin: 342↔460V

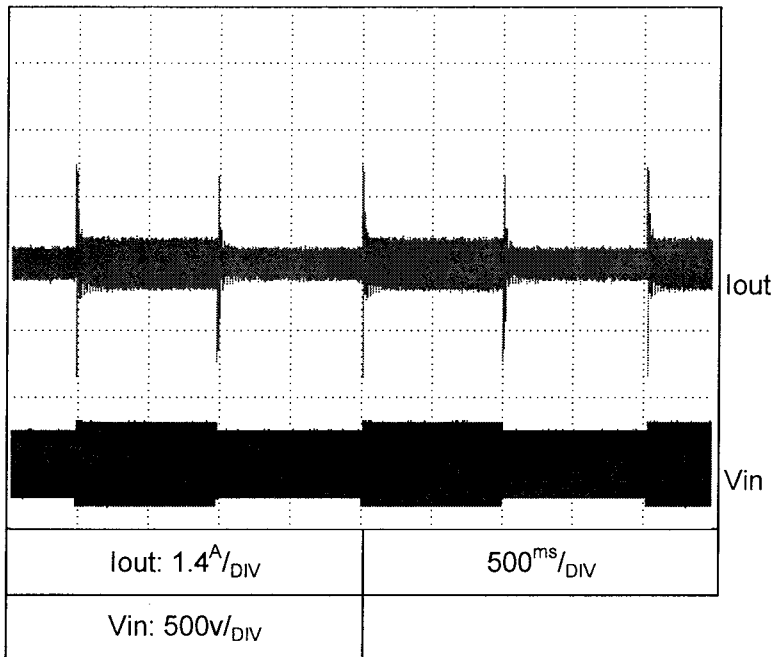


2.7 Dynamic line response characteristics
C.C mode

Ta = 25°C

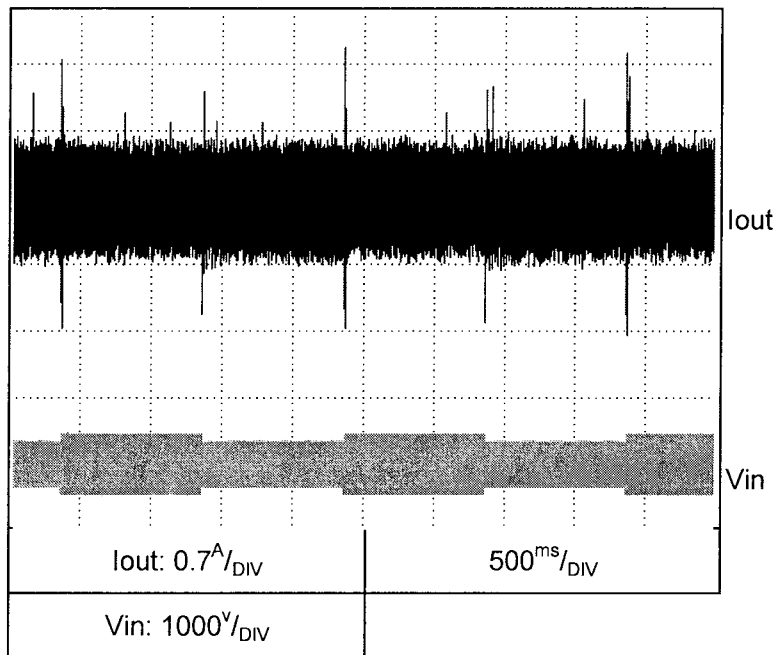
GEN8-600 3Φ 200

Conditions: Vout: 100%
Iout: 100%
Vin: 170↔265V



GEN8-600 3Φ 400

Conditions: Vout: 100%
Iout: 100%
Vin: 342↔460V



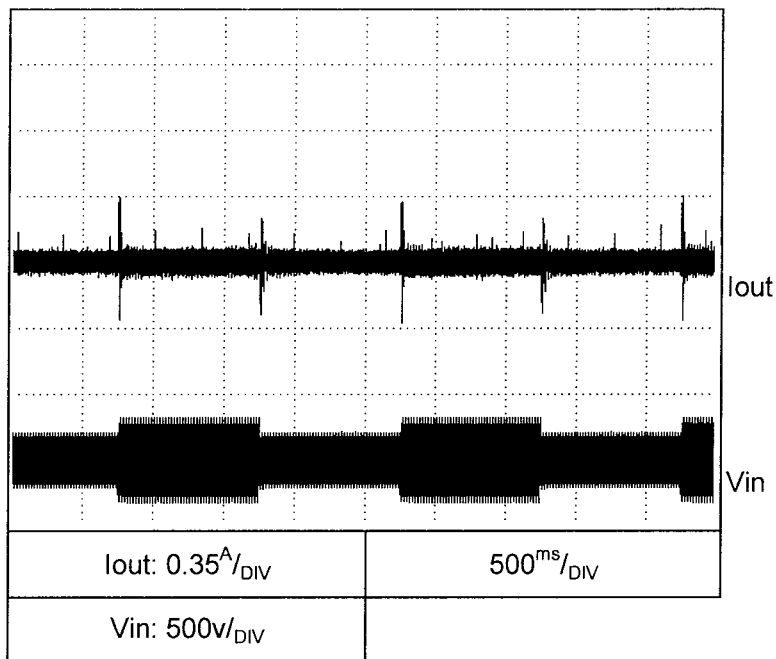
2.7 Dynamic line response characteristics

Ta = 25°C

C.C mode

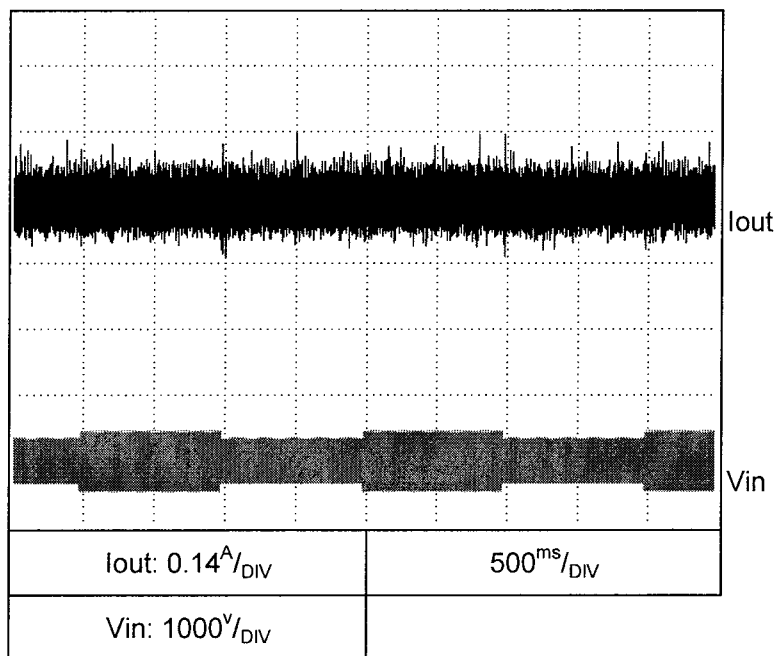
GEN60-85 3Φ 200

Conditions: Vout: 100%
Iout: 100%
Vin: 170↔265V



GEN60-85 3Φ 400

Conditions: Vout: 100%
Iout: 100%
Vin: 342↔460V



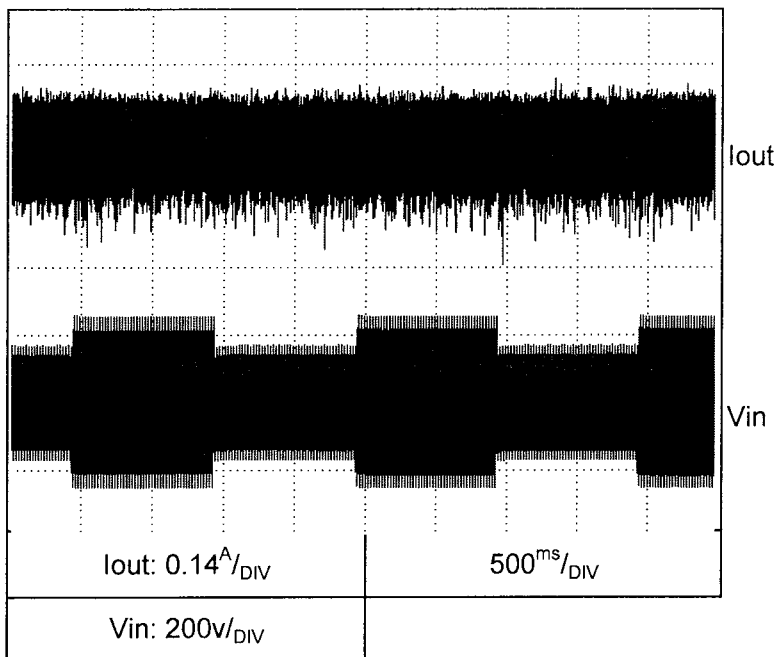
2.7 Dynamic line response characteristics

C.C mode

Ta = 25°C

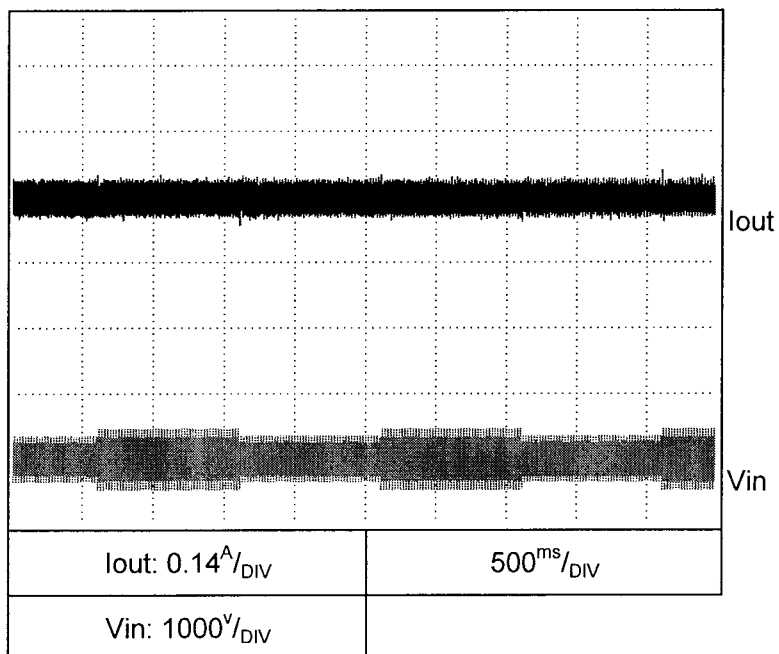
GEN150-34 3Φ 200

Conditions: Vout: 100%
Iout: 100%
Vin: 170↔265V



GEN150-34 3Φ 400

Conditions: Vout: 100%
Iout: 100%
Vin: 342↔460V



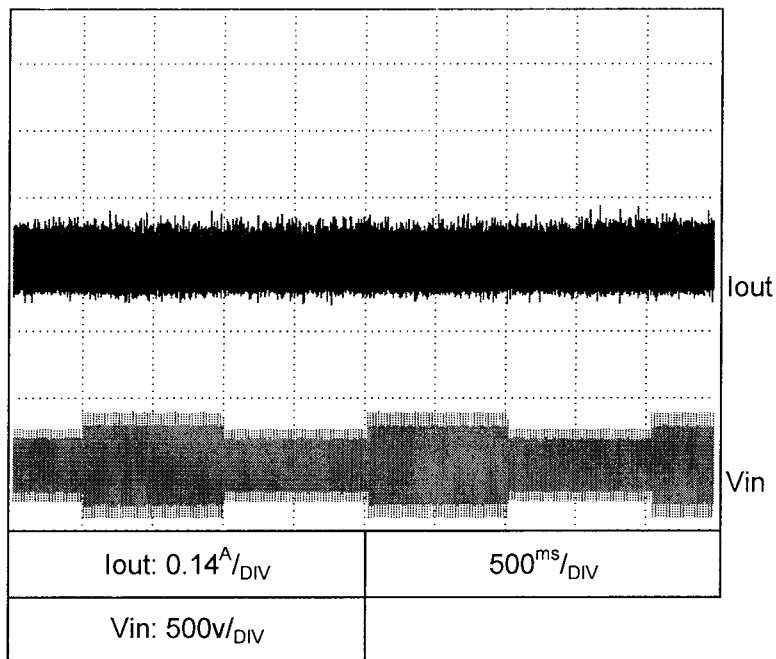
2.7 Dynamic line response characteristics

C.C mode

Ta = 25°C

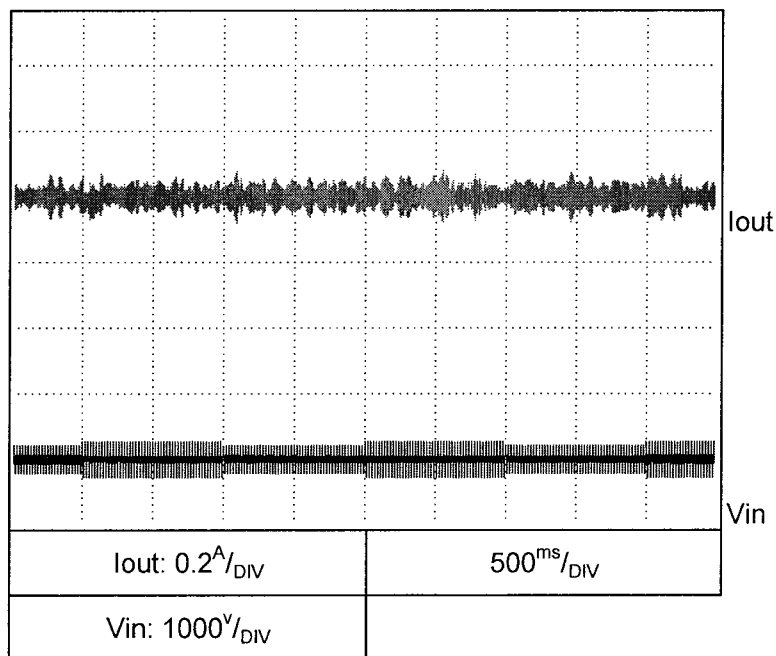
GEN600-8.5 3Φ 200

Conditions: Vout: 100%
Iout: 100%
Vin: 170↔265V



GEN600-8.5 3Φ 400

Conditions: Vout: 100%
Iout: 100%
Vin: 342↔460V

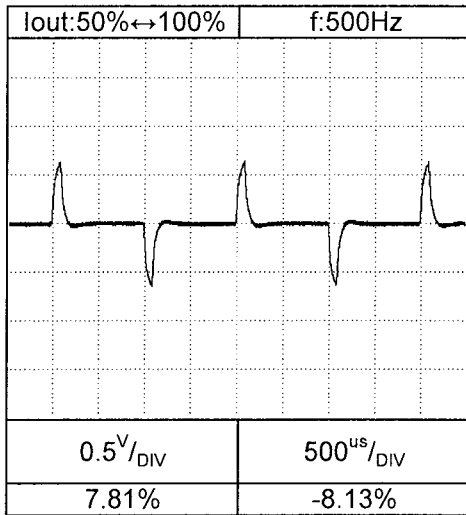
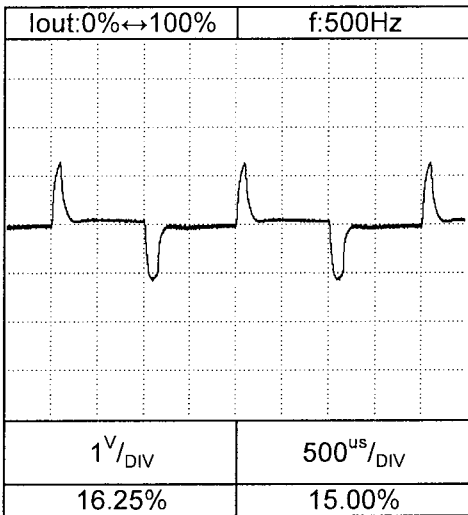
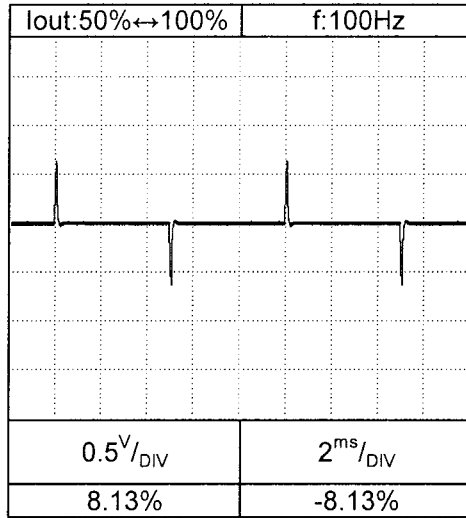
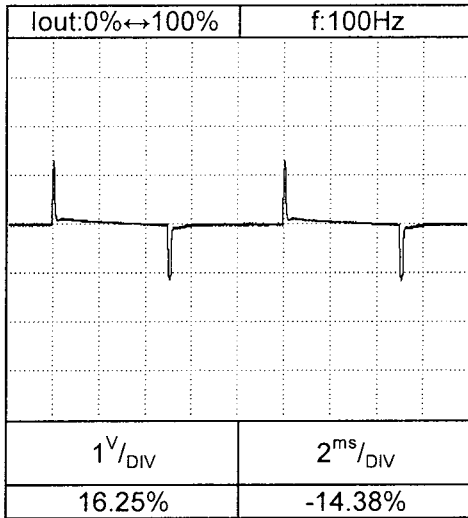


2.8 Dynamic load response characteristics
C.V mode

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

Load current: tr=tf=100us

GEN8-600

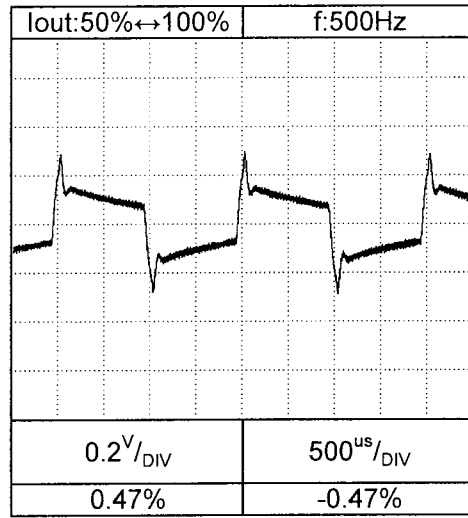
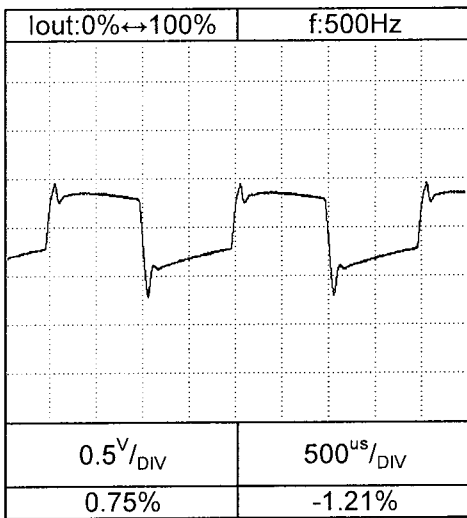
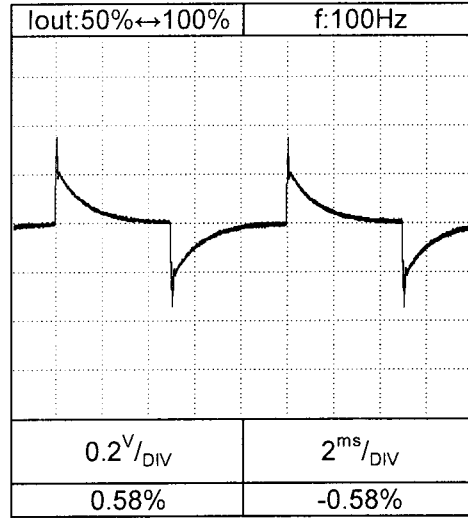
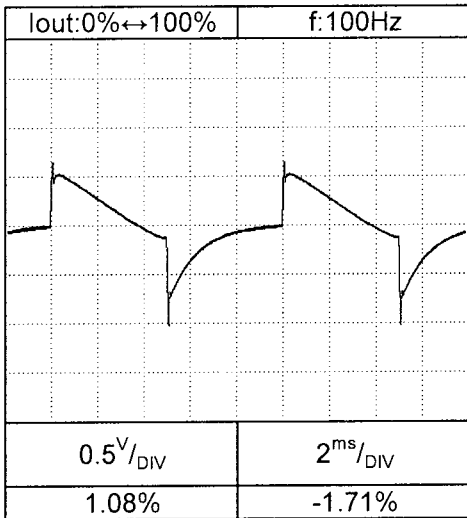


2.8 Dynamic load response characteristics
C.V mode

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

Load current: tr=tf=100us

GEN60-85

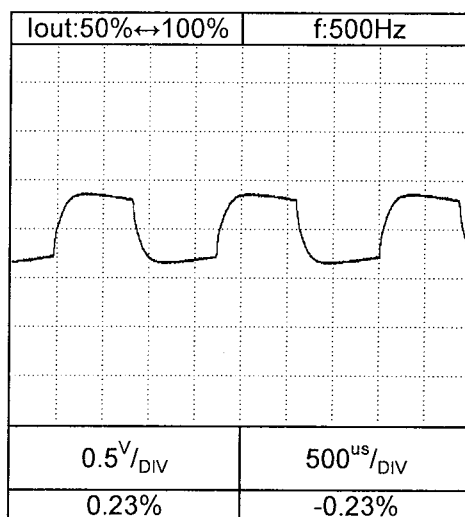
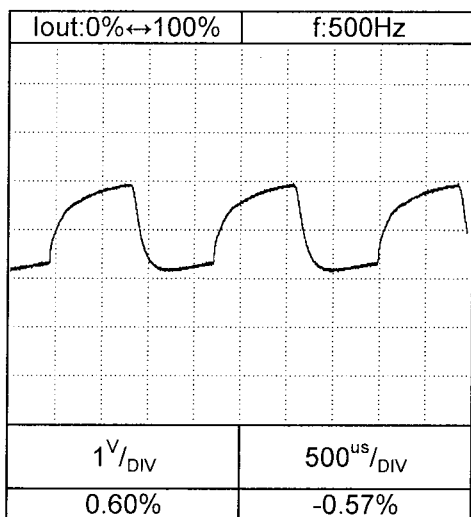
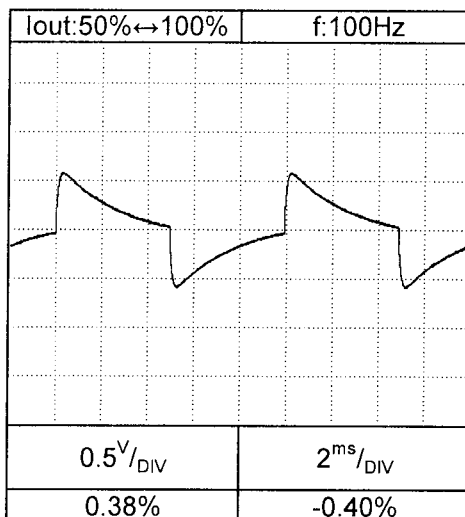
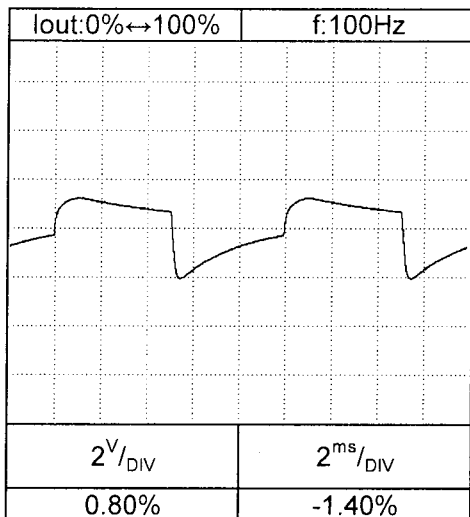


2.8 Dynamic load response characteristics
C.V mode

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

Load current: tr=tf=100us

GEN150-34

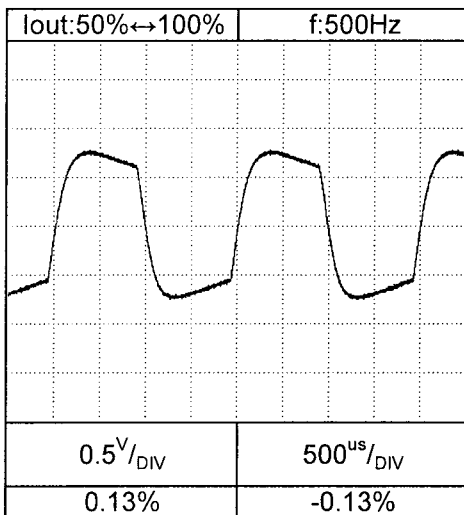
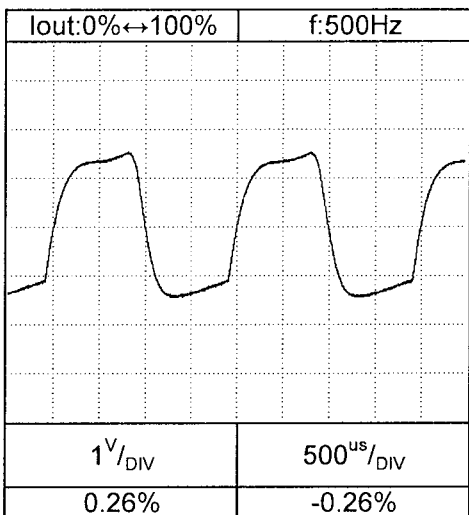
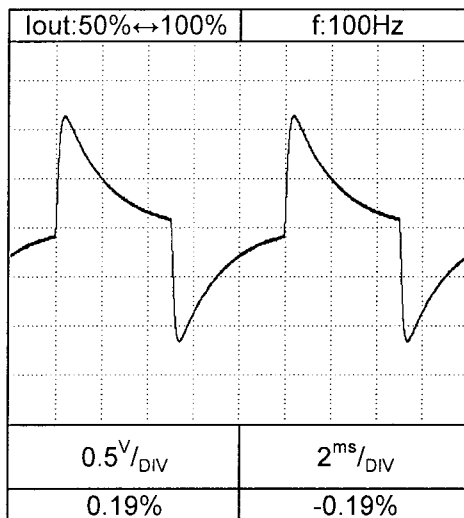
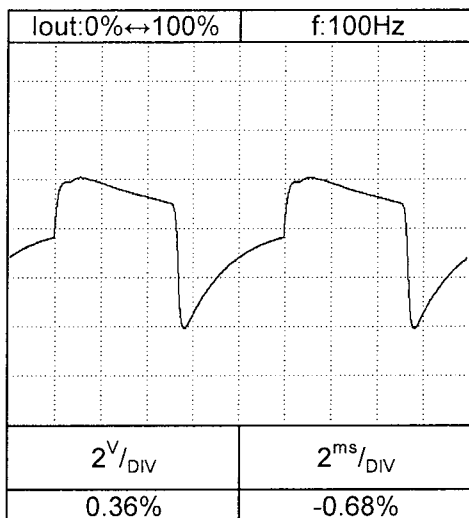


2.8 Dynamic load response characteristics
C.V mode

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

Load current: tr=tf=100us

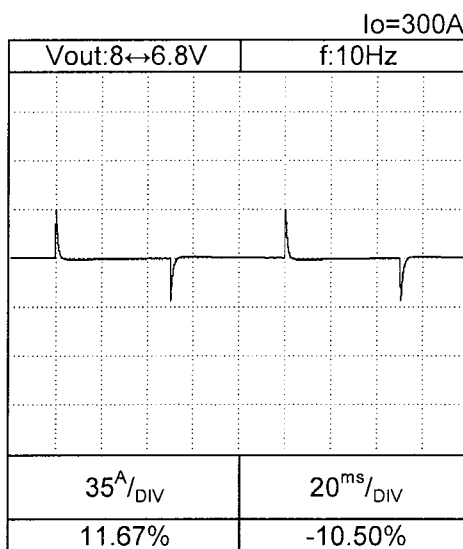
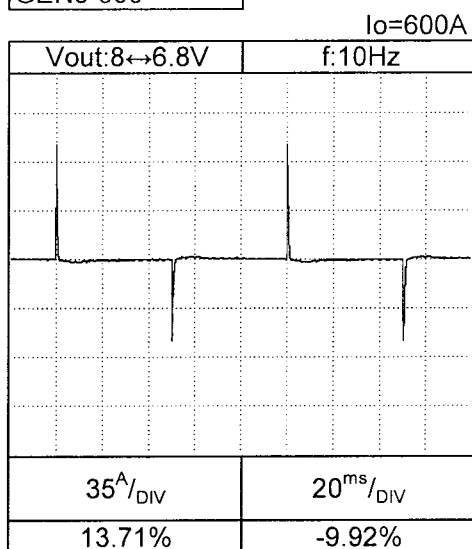
GEN600-8.5



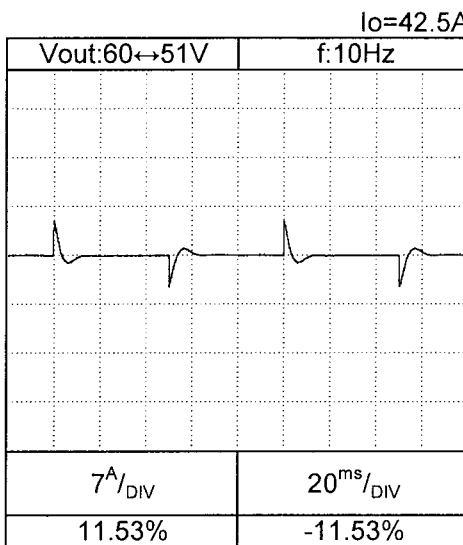
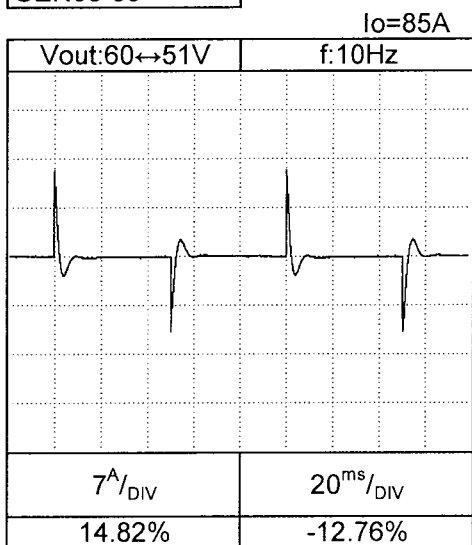
2.8 Dynamic load response characteristics
C.C mode

Conditions: V_{in} : Nominal
 $T_a = 25^{\circ}\text{C}$

GEN8-600



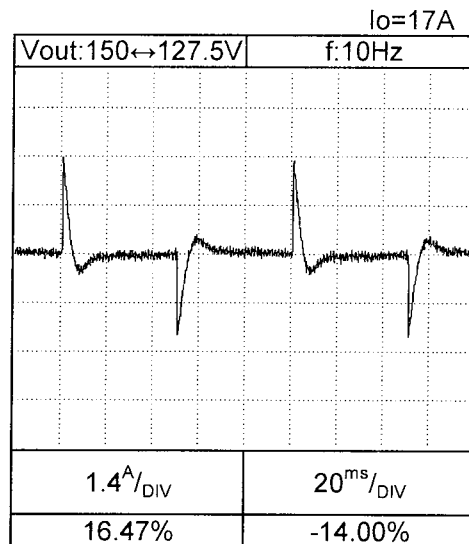
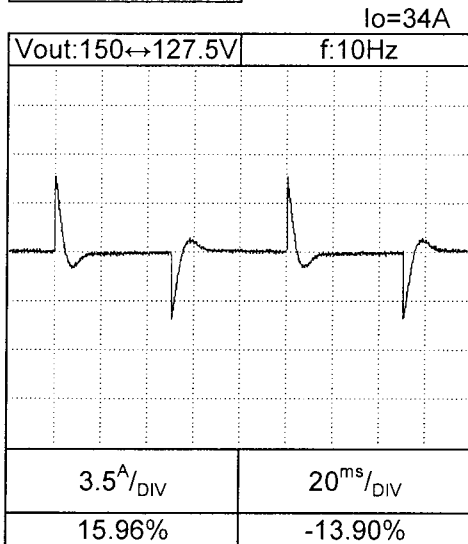
GEN60-85



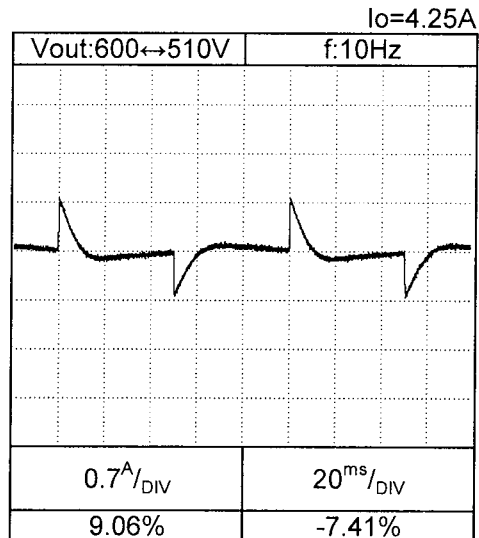
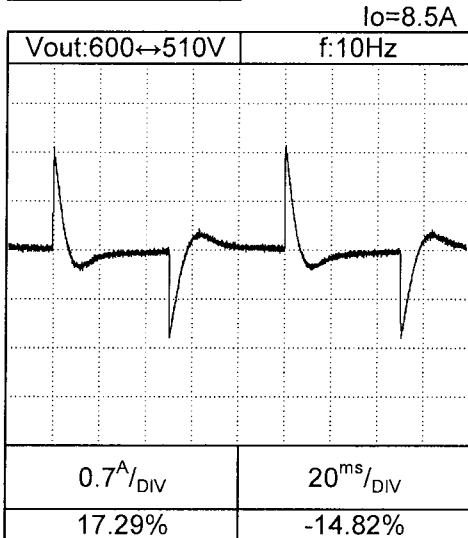
2.8 Dynamic load response characteristics
C.C mode

Conditions: Vin: Nominal
Ta = 25°C

GEN150-34



GEN600-8.5



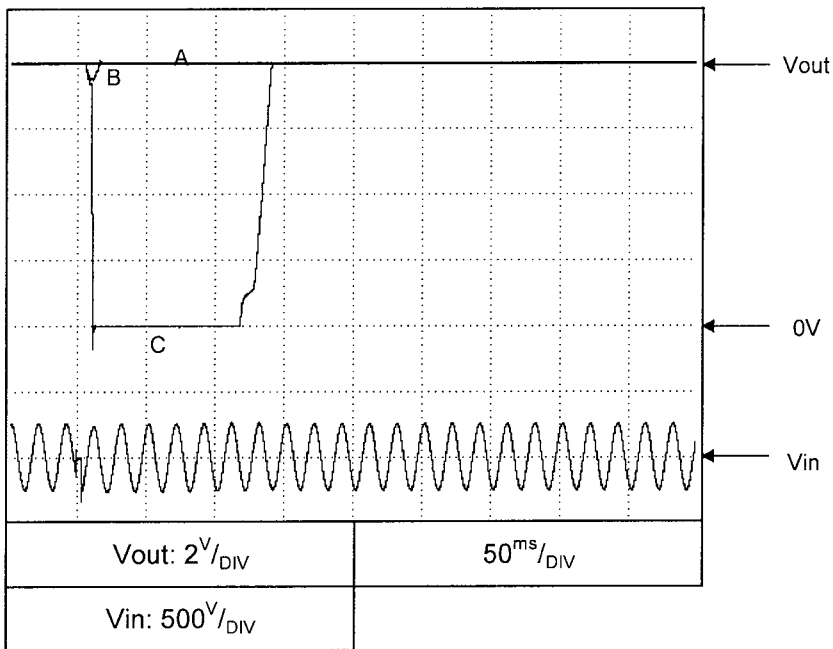
2.9 Response to brown-out characteristics

C.V mode

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

GEN8-600 3Φ 200

Vin:208VAC



Brown-out time

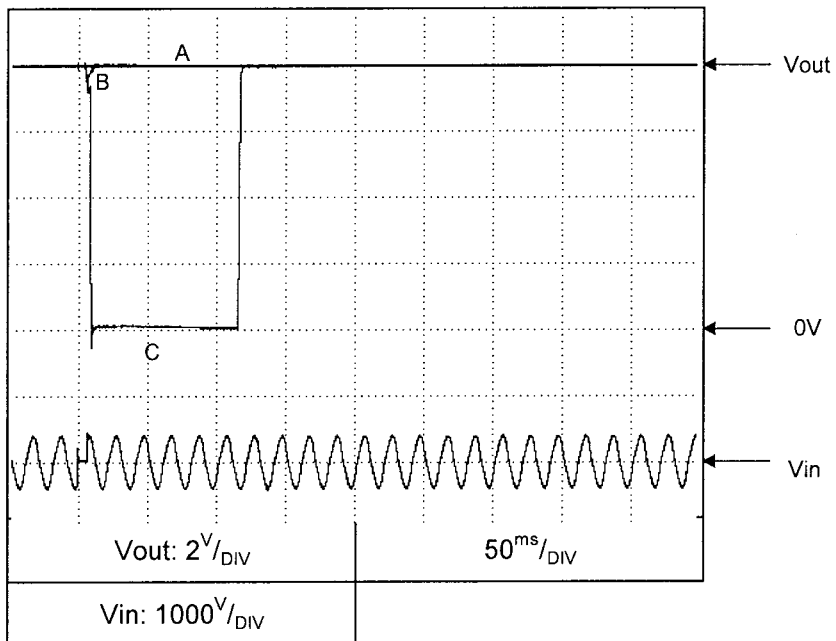
A - 0ms

B - 1ms

C - 4ms

GEN8-600 3Φ 400

Vin:400VAC



Brown-out time

A - 5ms

B - 6ms

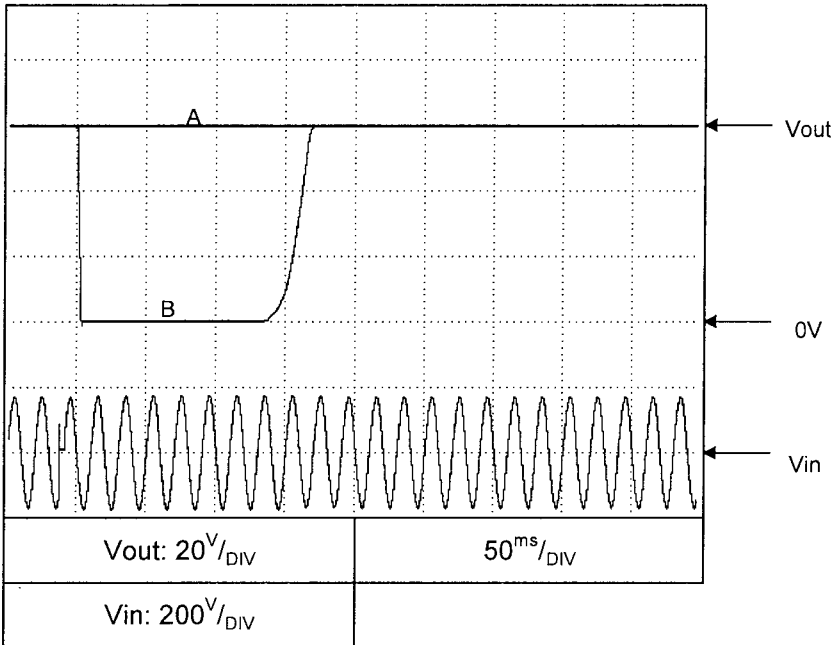
C - 7ms

2.9 Response to brown-out characteristics
C.V mode

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

GEN60-85 3Φ 200

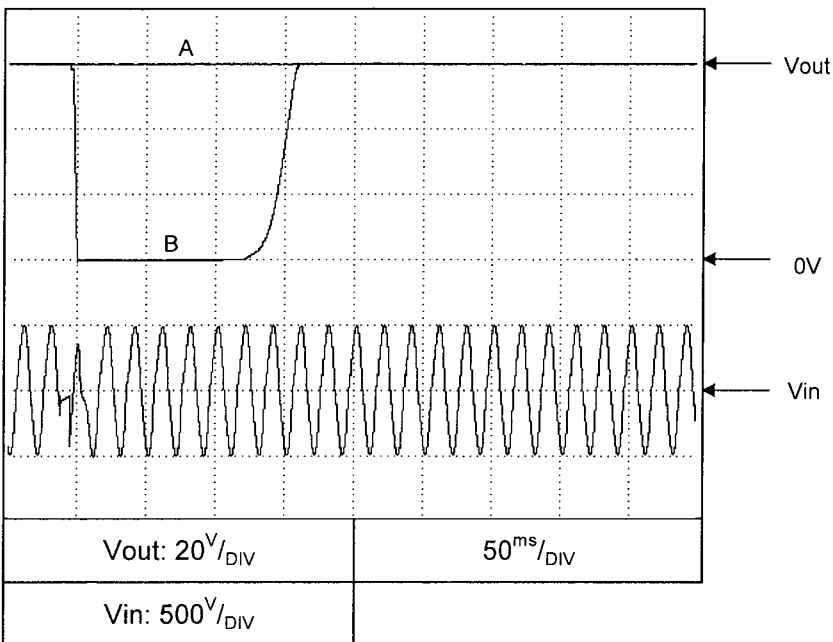
Vin:208VAC



Brown-out time
A - 3ms
B - 4ms

GEN60-85 3Φ 400

Vin:400VAC



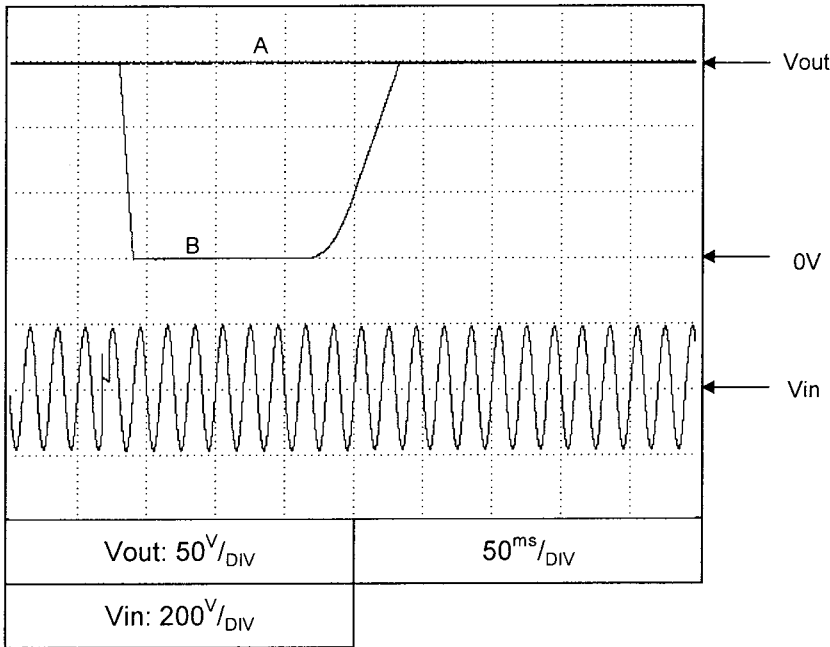
Brown-out time
A - 6ms
B - 7ms

2.9 Response to brown-out characteristics
C.V mode

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

GEN150-34 3Φ 200

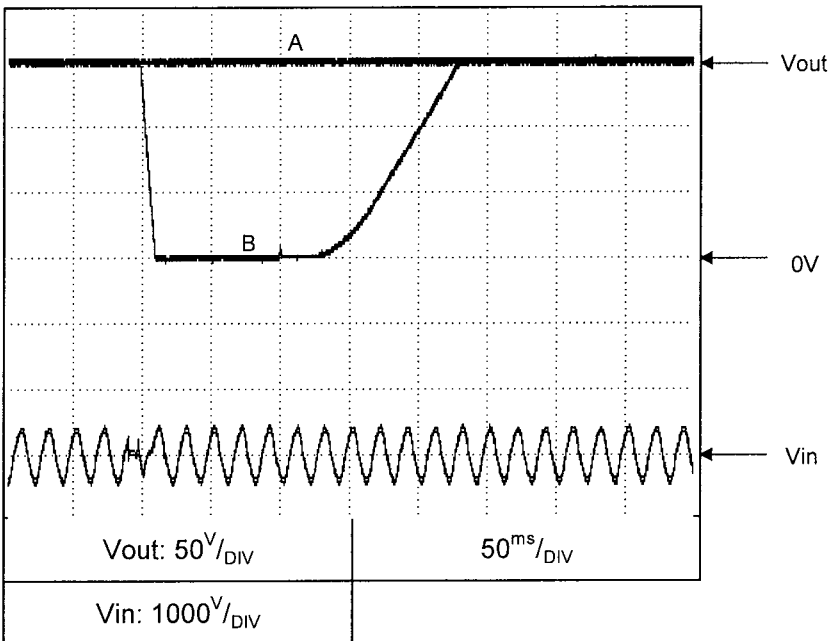
Vin:208VAC



Brown-out time
A - 4ms
B - 5ms

GEN150-34 3Φ 400

Vin:400VAC



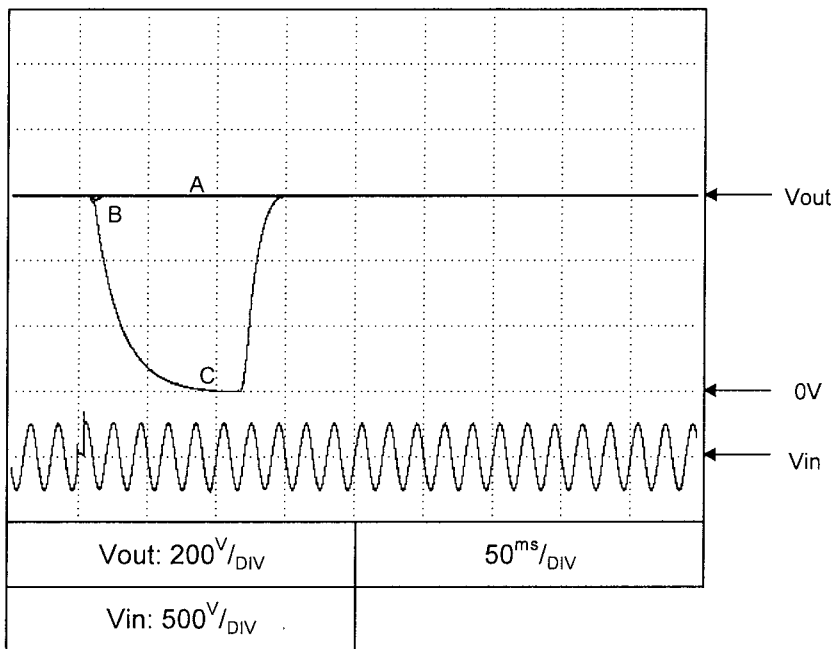
Brown-out time
A - 6ms
B - 7ms

2.9 Response to brown-out characteristics
C.V mode

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

GEN600-8.5 3Φ 200

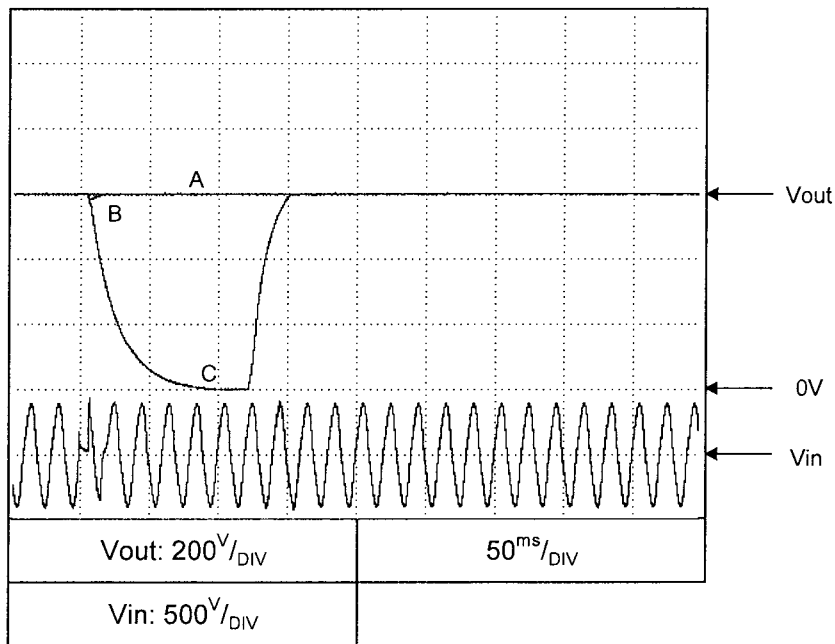
Vin:208VAC



Brown-out time
A - 3ms
B - 4ms
C - 5ms

GEN600-8.5 3Φ 400

Vin:400VAC



Brown-out time
A - 6ms
B - 7ms
C - 8ms

2.9 Response to brown-out characteristics

C.C mode

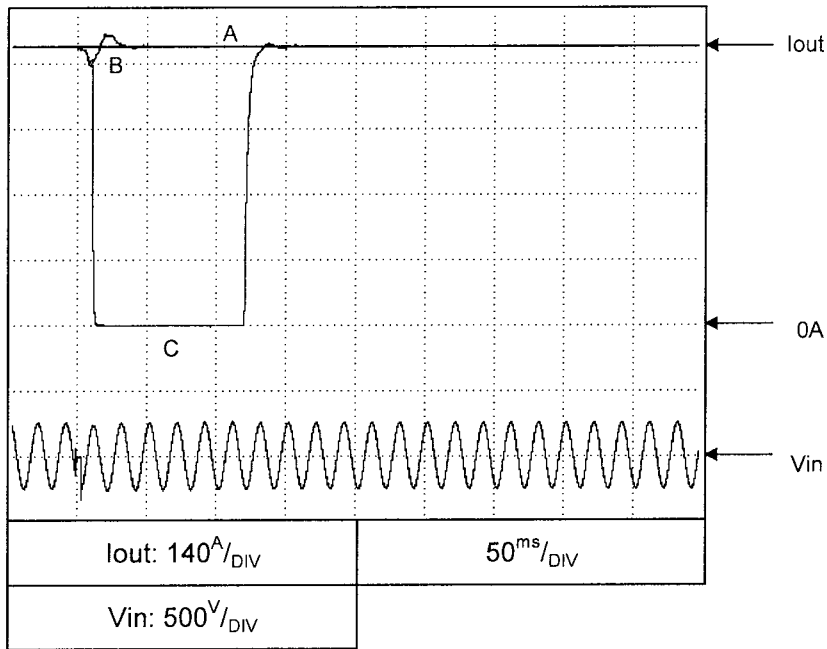
Conditions: Vout: 100%

Iout: 100%

Ta = 25°C

GEN8-600 3Φ 200

Vin:208VAC



Brown-out time

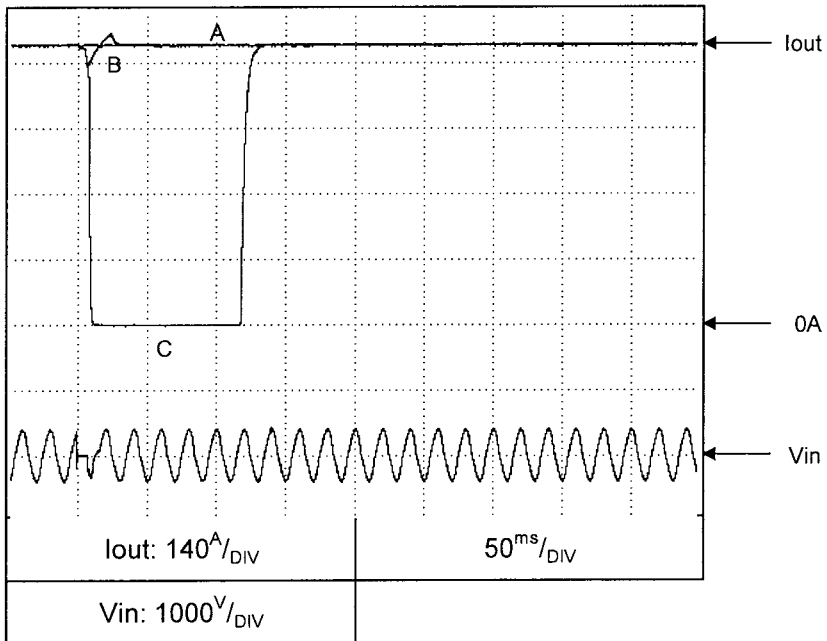
A - 0ms

B - 1ms

C - 4ms

GEN8-600 3Φ 400

Vin:400VAC



Brown-out time

A - 2ms

B - 7ms

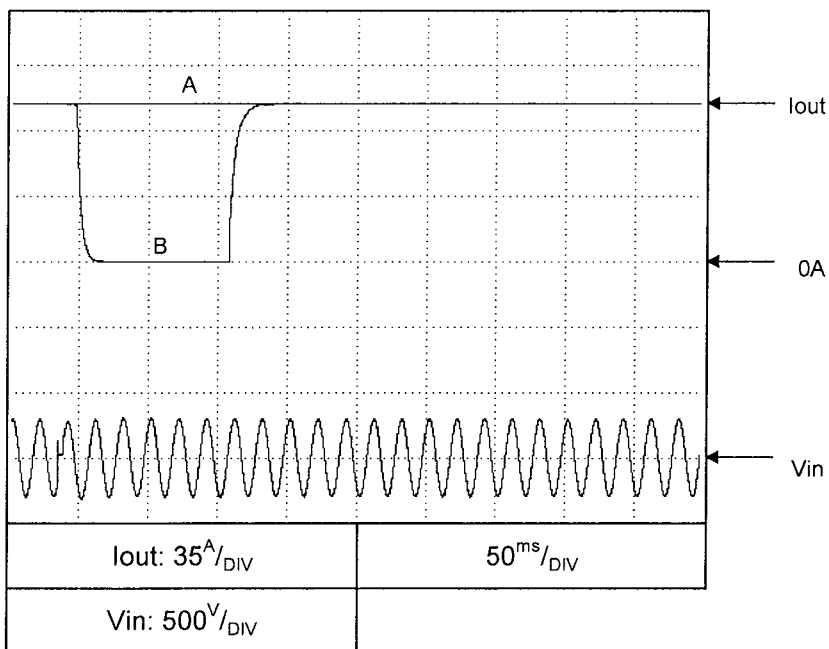
C - 8ms

2.9 Response to brown-out characteristics
C.C mode

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

GEN60-85 3Φ 200

Vin:208VAC



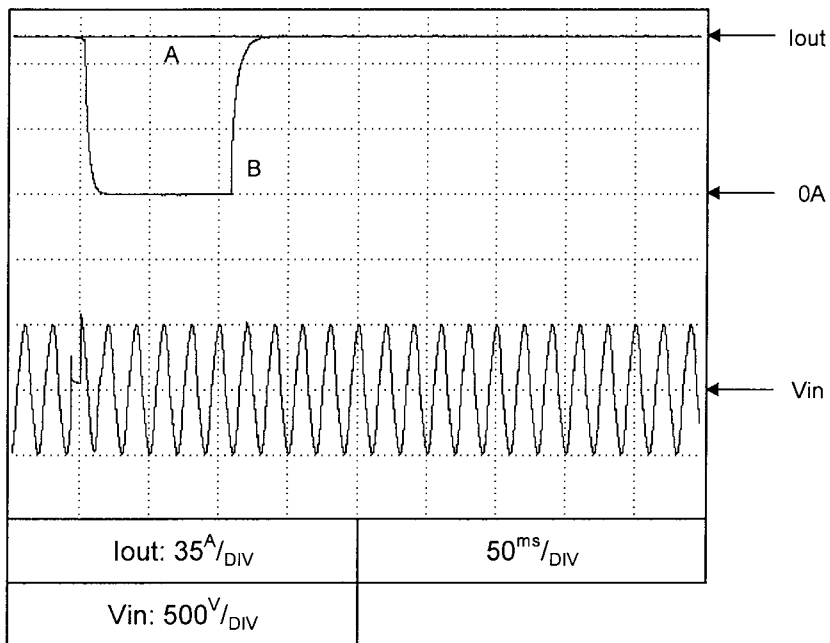
Brown-out time

A - 3ms

B - 4ms

GEN60-85 3Φ 400

Vin:400VAC



Brown-out time

A - 6ms

B - 7ms

2.9 Response to brown-out characteristics

C.C mode

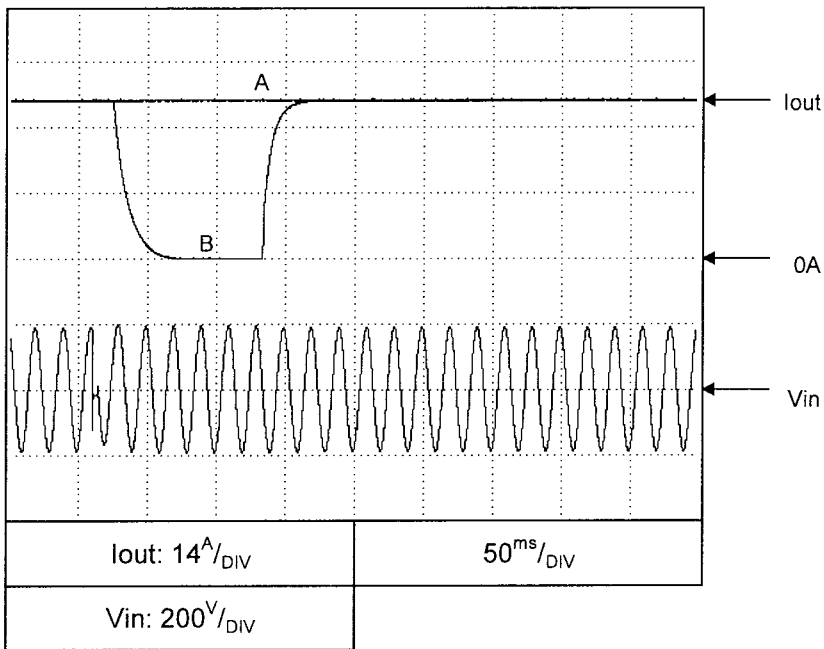
Conditions: Vout: 100%

Iout: 100%

Ta = 25°C

GEN150-34 3Φ 200

Vin:208VAC



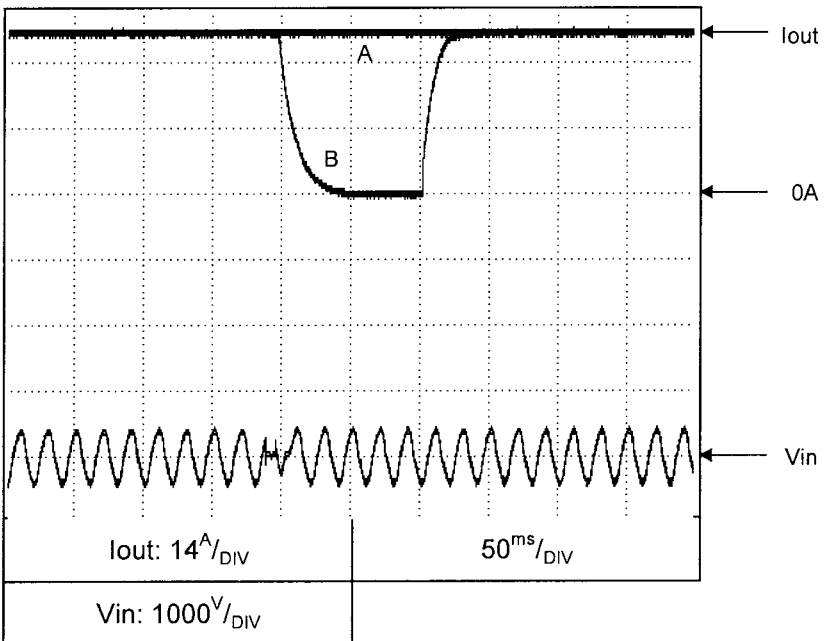
Brown-out time

A - 3ms

B - 4ms

GEN150-34 3Φ 400

Vin:400VAC



Brown-out time

A - 6ms

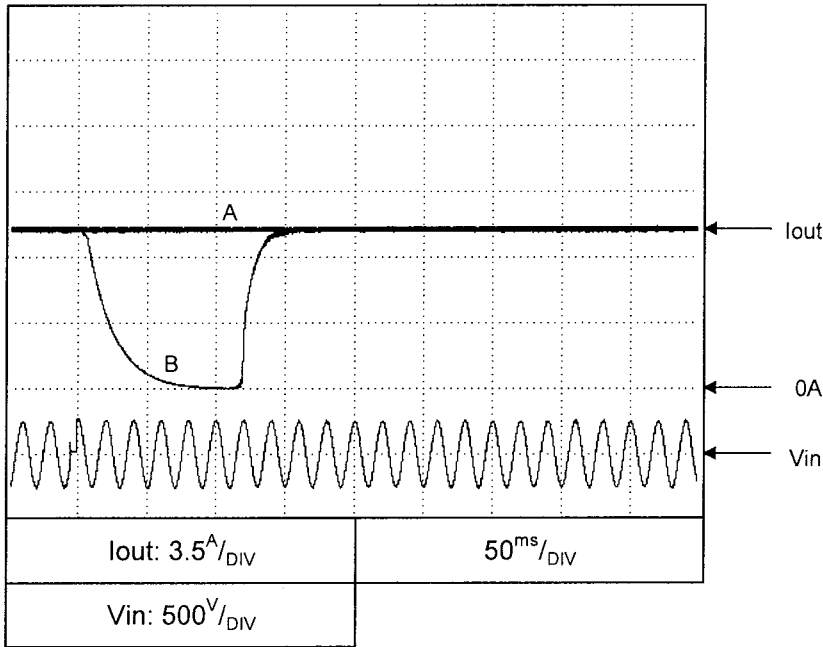
B - 7ms

2.9 Response to brown-out characteristics
C.C mode

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

GEN600-8.5 3Φ 200

Vin:208VAC



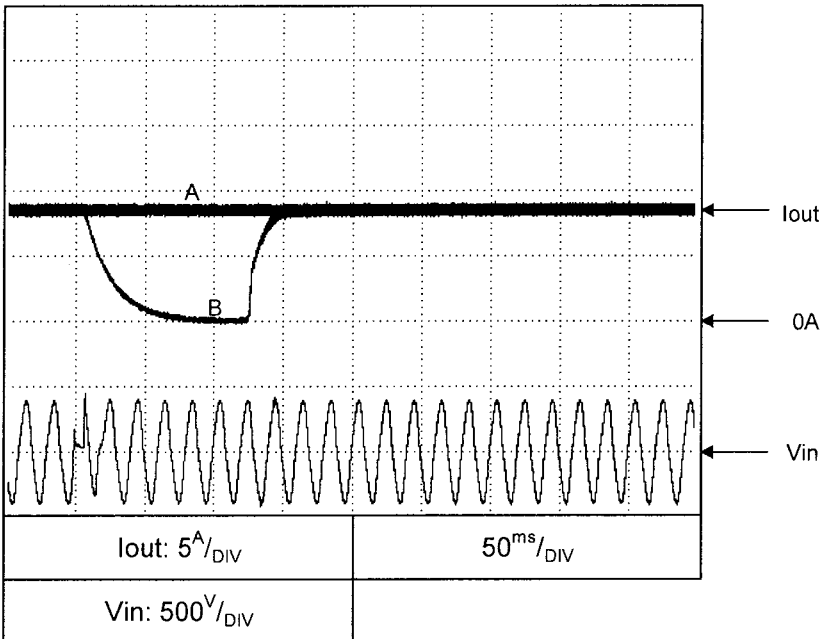
Brown-out time

A - 4ms

B - 5ms

GEN600-8.5 3Φ 400

Vin:400VAC



Brown-out time

A - 7ms

B - 8ms

2.10 Inrush Current Characteristics

Conditions: Vout: 100%

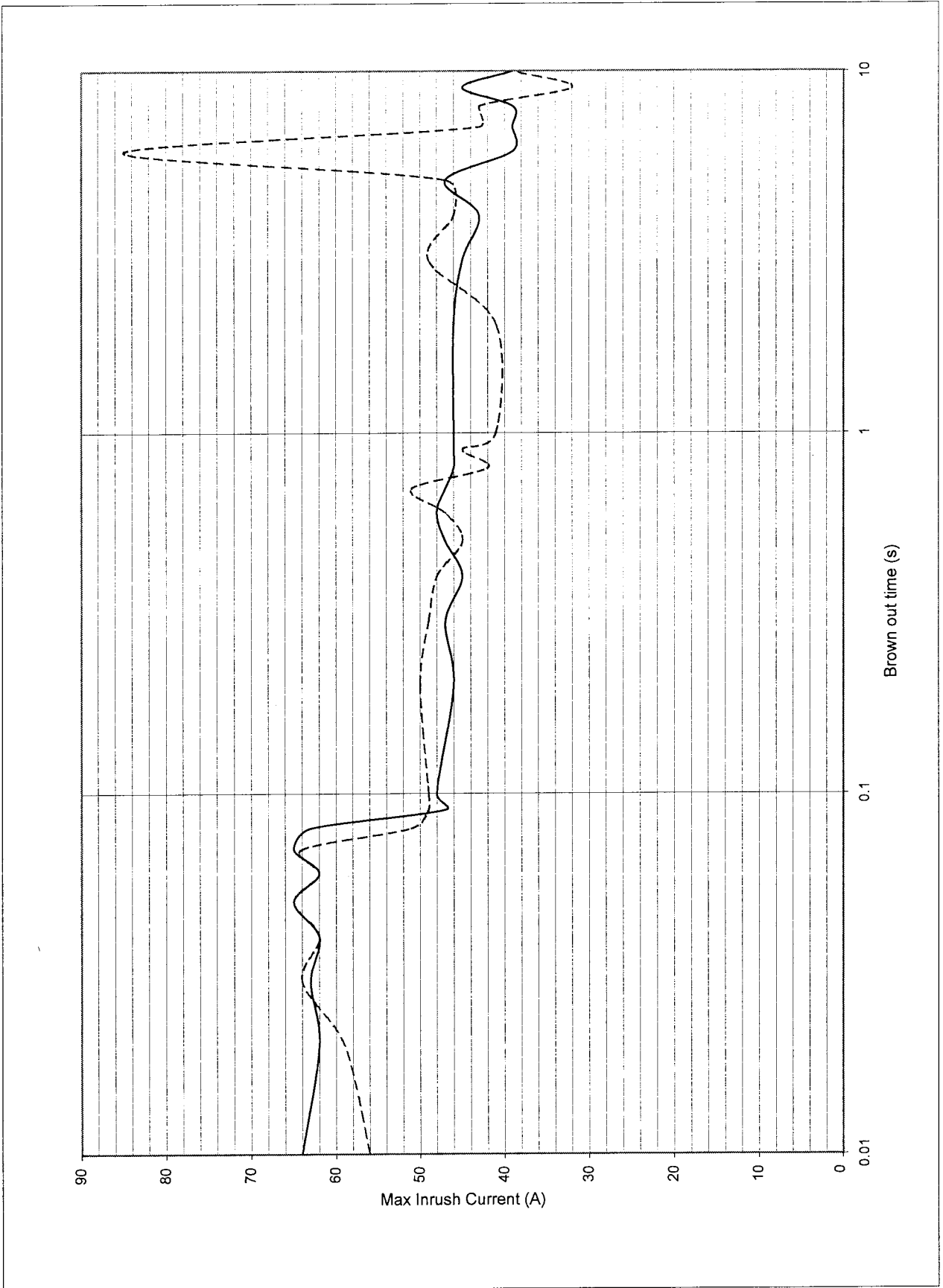
Iout: 0%

Iout: 100%

Vin: 200VAC

Ta = 25°C

3Φ 200 Input



2.10 Inrush Current Characteristics

Conditions: Vout: 100%

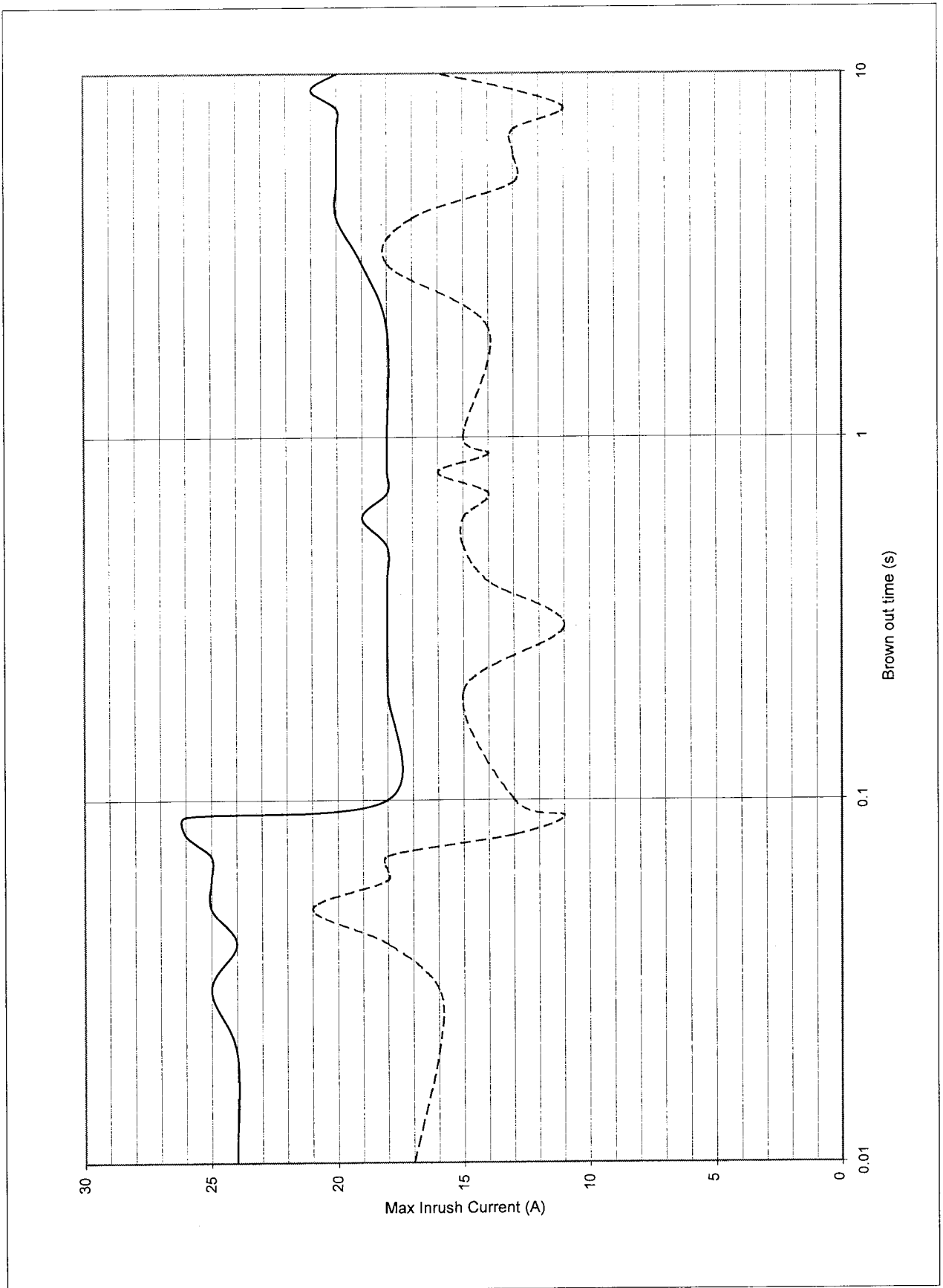
Iout: 0%

Iout: 100%

Vin: 400VAC

Ta = 25°C

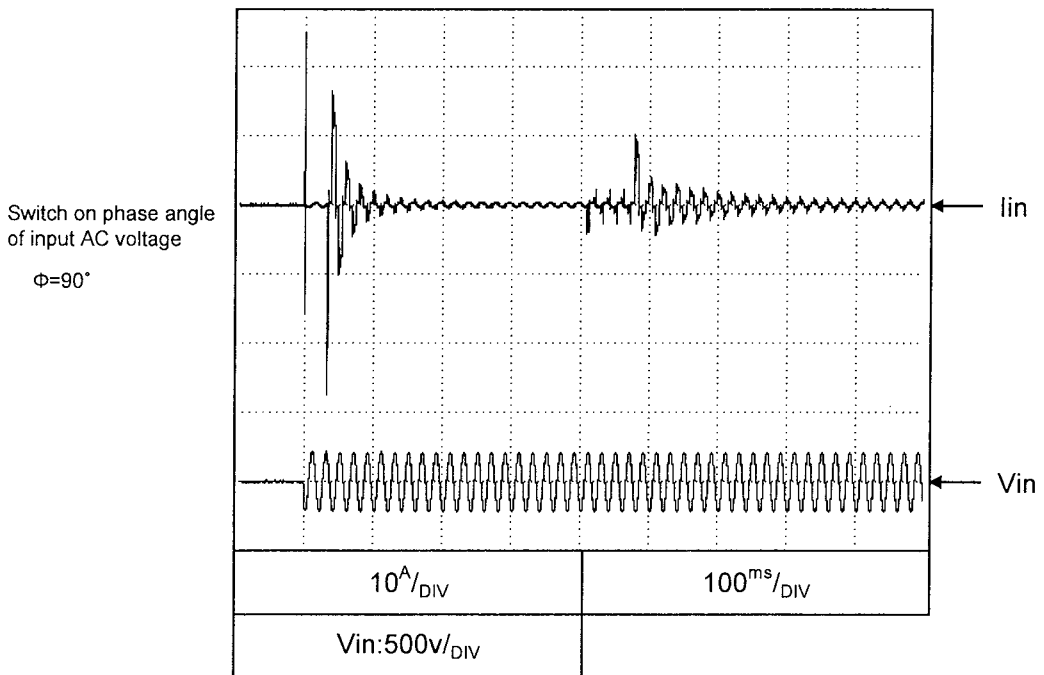
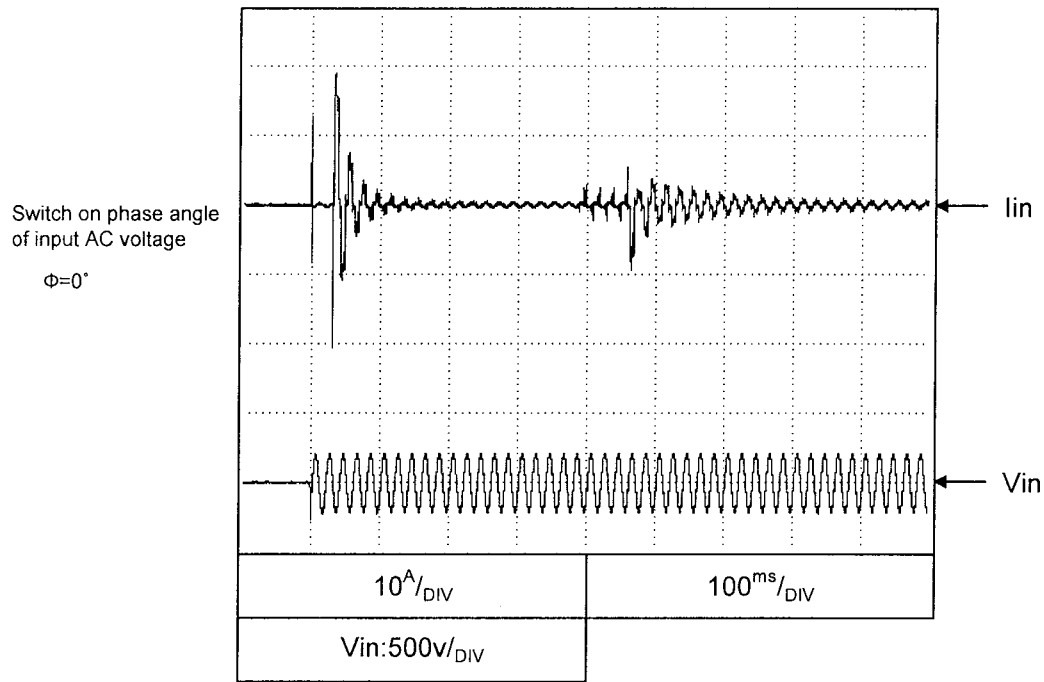
3Φ 400 Input



2.11 Inrush current waveform

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

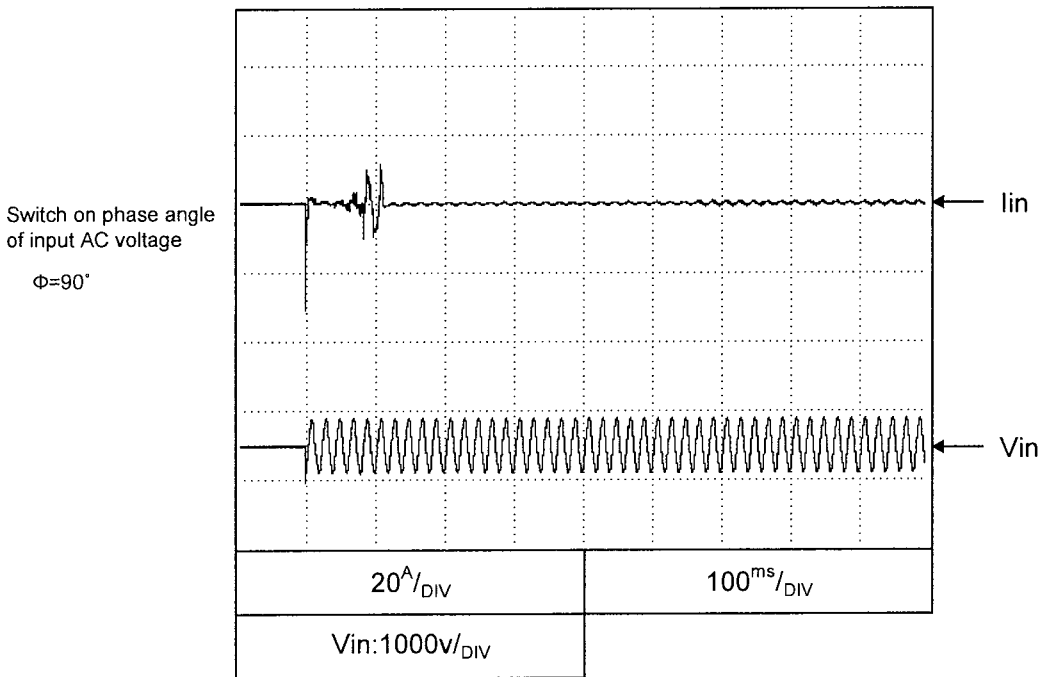
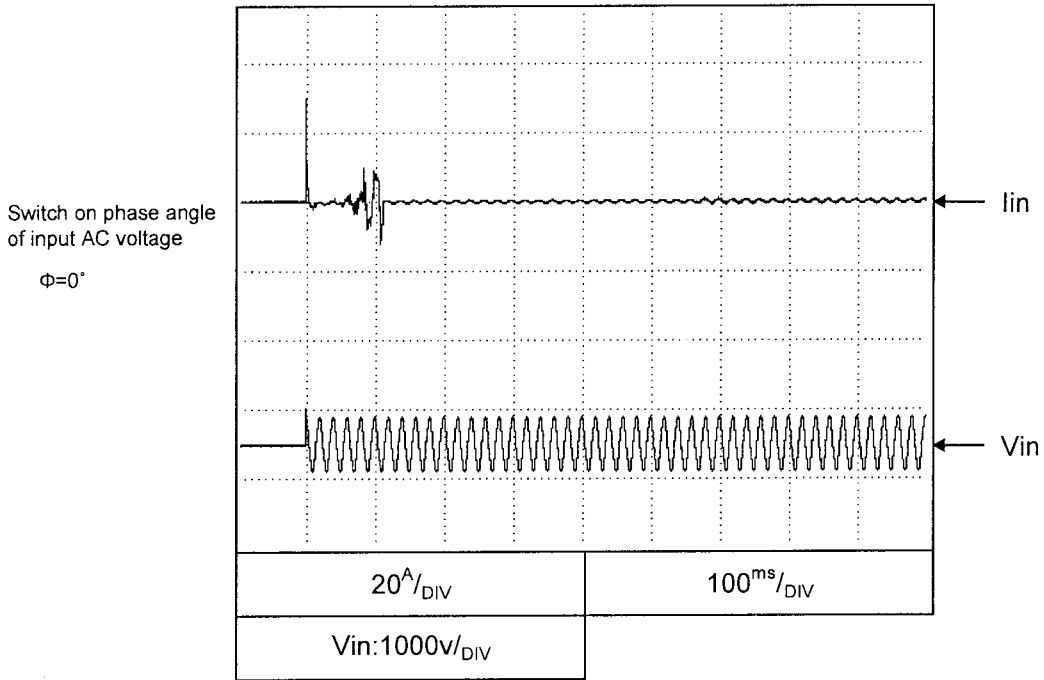
3Φ 200 Input



2.11 Inrush current waveform

Conditions: Vin: 400V
Vout: 100%
Iout: 100%
Ta = 25°C

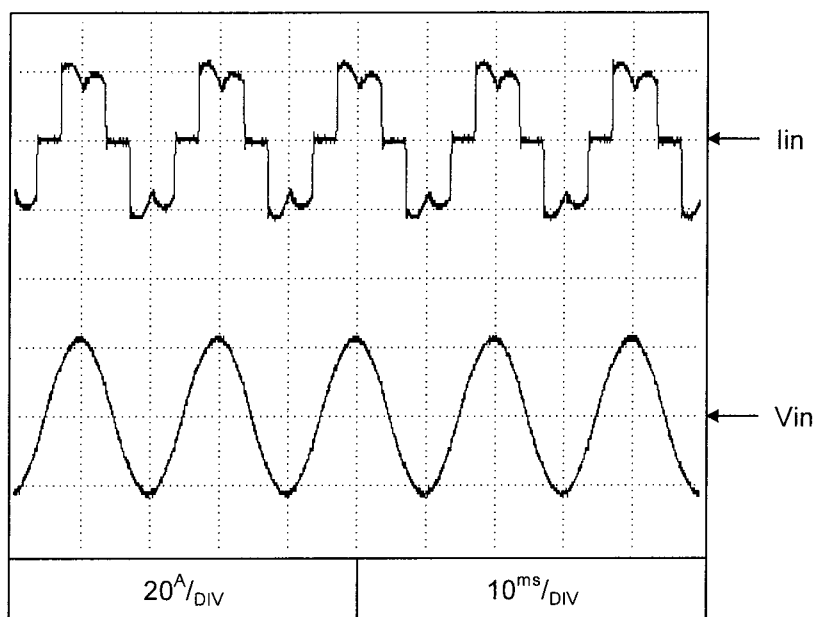
3Φ 400 Input



2.12 Input current waveform

Conditions: V_{in} : 208VAC
 V_{out} : 100%
 I_{out} : 100%
 $T_a = 25^{\circ}\text{C}$

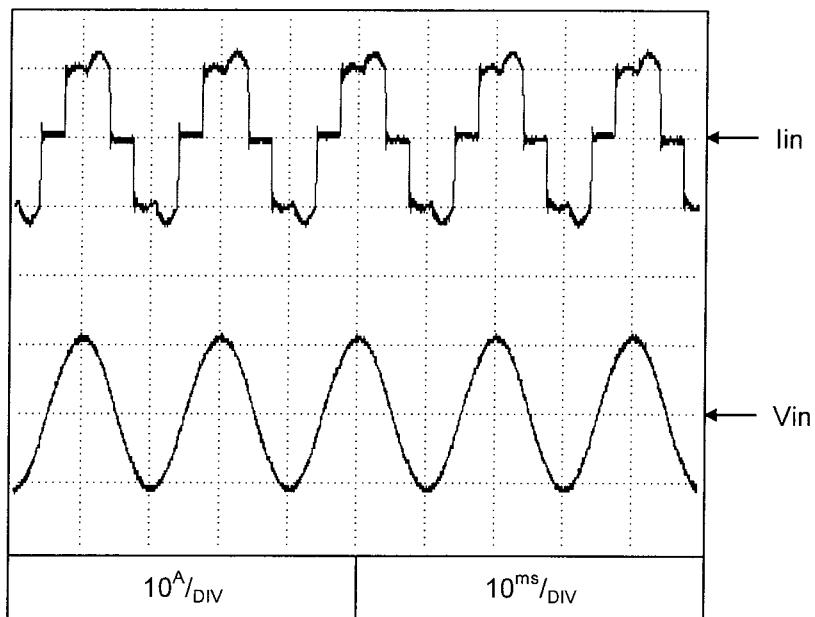
3 Φ 200 Input



2.12 Input current waveform

Conditions: Vin: 400VAC
Vout: 100%
Iout: 100%
Ta = 25°C

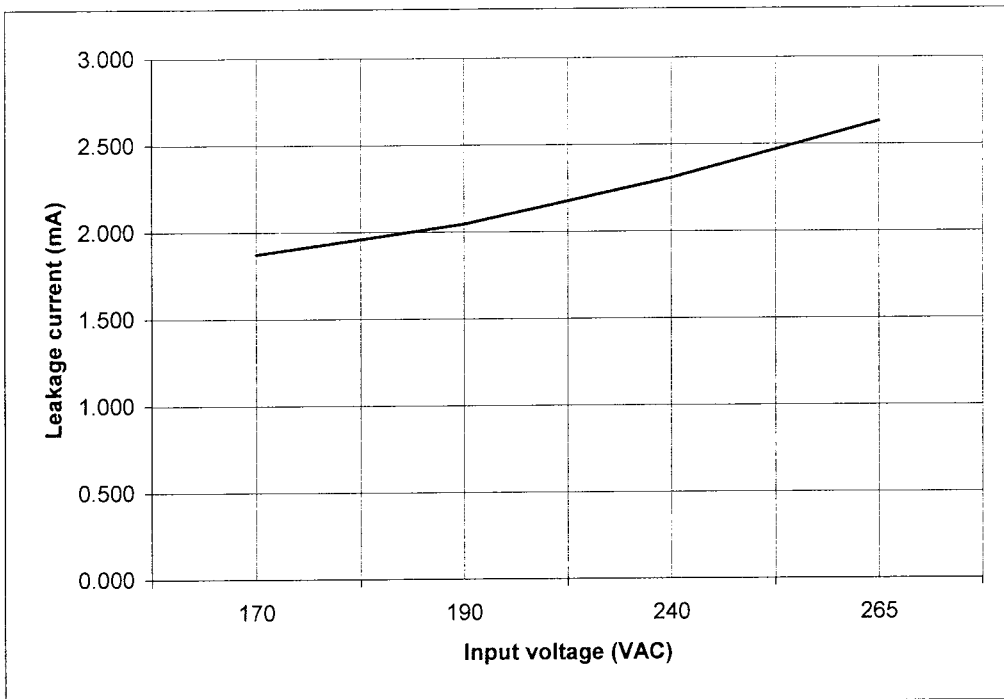
3Φ 400 Input



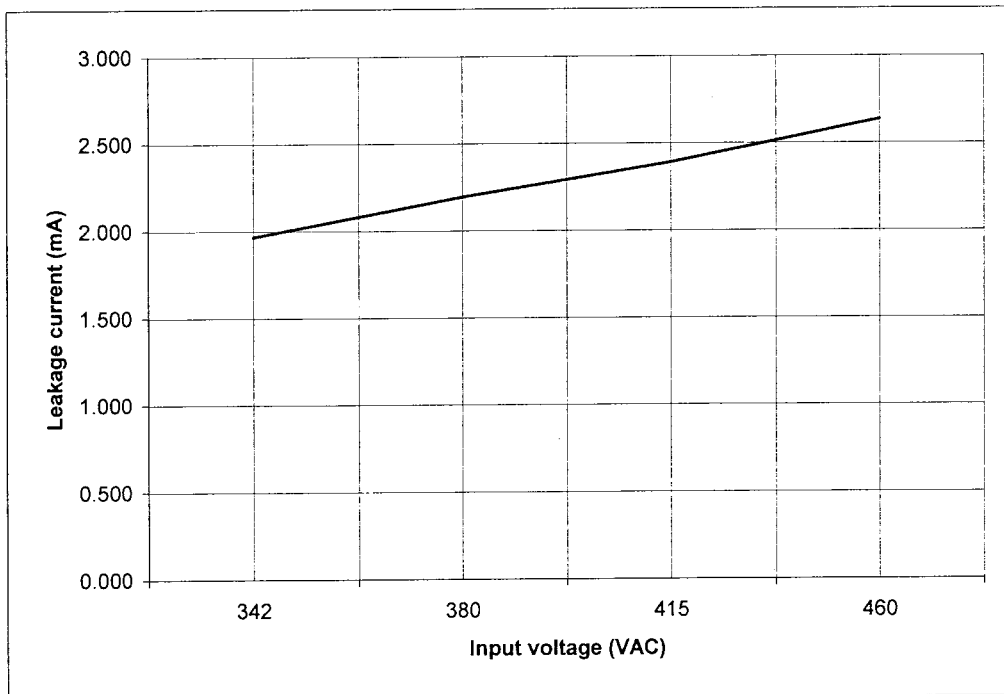
2.13 Leakage current characteristics

Conditions: $T_a = 25^\circ\text{C}$
 $f=60\text{Hz}$

3 Φ 170-265V (*)



3 Φ 342-460V (*)



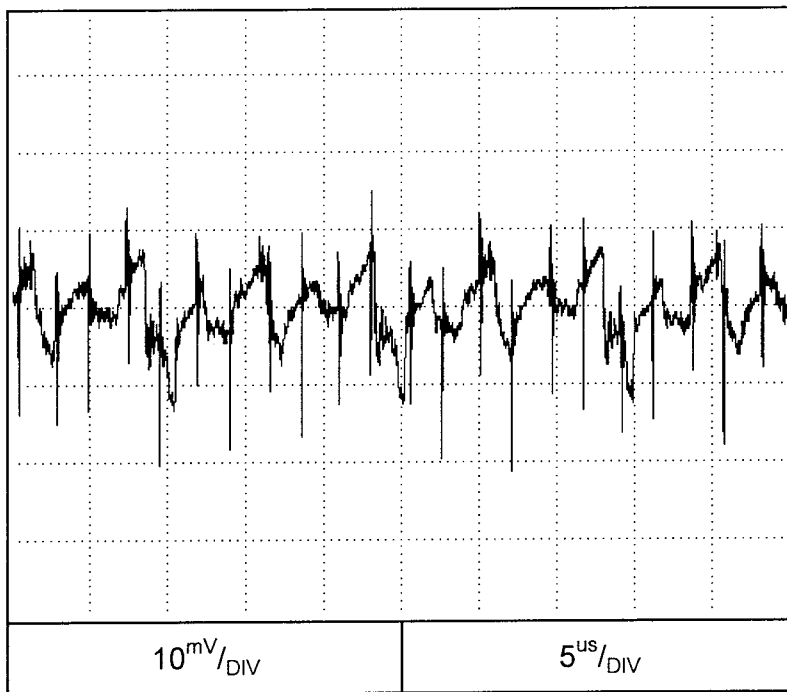
(*) TN & TT power system

2.14 Output ripple & noise waveform
C.V mode

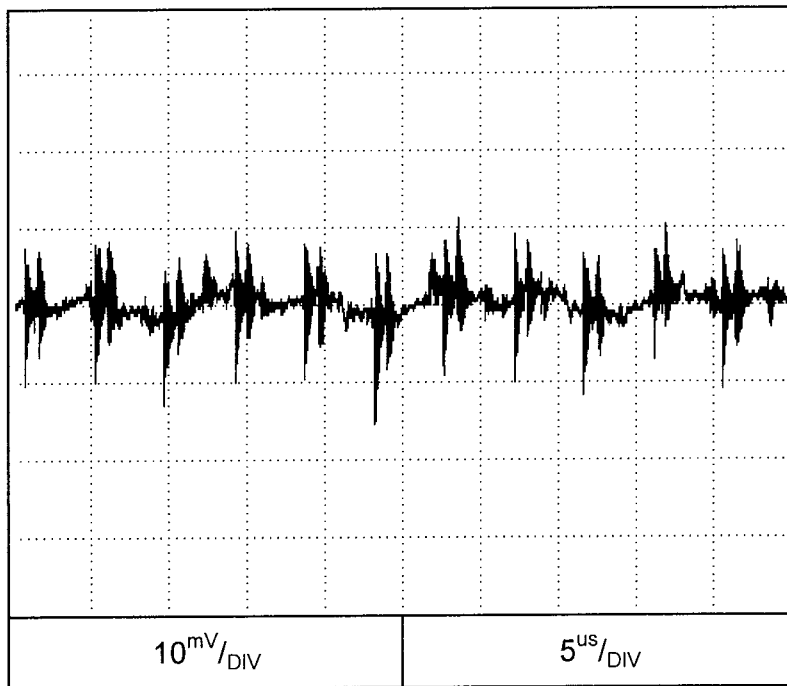
Conditions: Vout: 100%
Iout: 100%
Ta = 25°C

Normal Mode

GEN8-600



GEN60-85



2.14 Output ripple & noise waveform

C.V mode

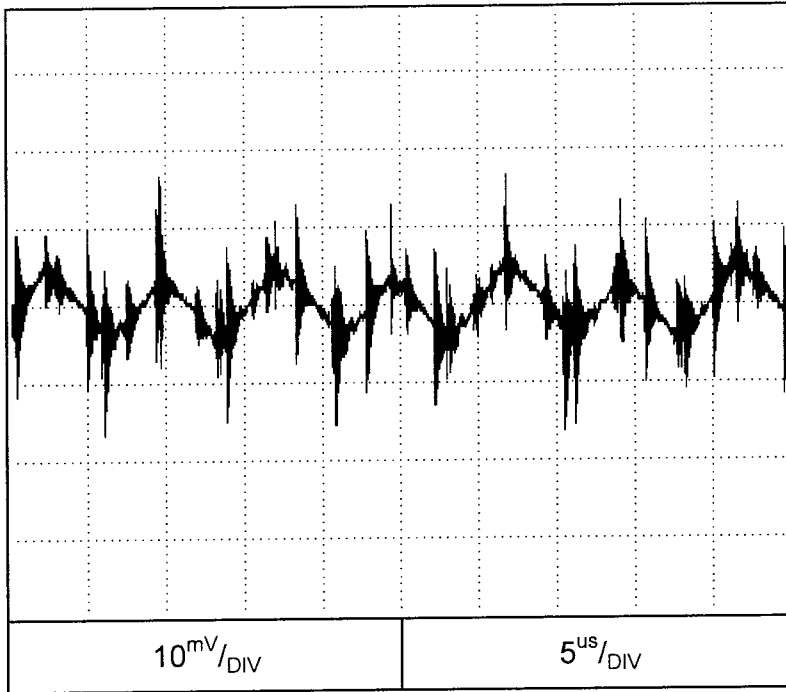
Conditions: Vout: 100%

Iout: 100%

Ta = 25°C

Normal Mode

GEN150-34



GEN600-8.5

