

DBM20

EVALUATION DATA

INDEX

1. Evaluation Method	PAGE
1-1 Circuit 1 used for determination	T-1
Steady state data	
Input over voltage protection (OVP) characteristics	
Buffer time characteristics	
Response to brown out time characteristics	
1-2 Circuit 2 used for determination	T-1
Ripple and noise waveform on buffer voltage	
1-3 Circuit 3 used for determination	T-2
Dynamic load response characteristics	
1-4 Circuit 4 used for determination	T-2
Inrush current waveform	
1-5 Configuration used for determination	T-3
EMI Electro-Magnetic Interference characteristics	
Radiated Emission	
1-6 List of Equipment Used	T-4
2. Characteristics	
2-1 Steady State Data	
(1) Regulation - load, temperature drift	T-5
(2) Ripple and noise on buffer voltage vs. input voltage	T-6
(3) Efficiency vs. load current	T-7
2-2 Input over voltage protection (OVP) characteristics	T-8
2-3 Buffer time characteristics	T-9
2-4 Dynamic load response characteristics	T-10~11
2-5 Response to brown out time characteristics	T-12~14
2-6 Inrush current waveform	T-15
2-7 Electro-Magnetic Interference characteristics	T-16
2-8 Signals timing characteristics	T-17~20
2-9 Parallel operation signals timing characteristics	T-21

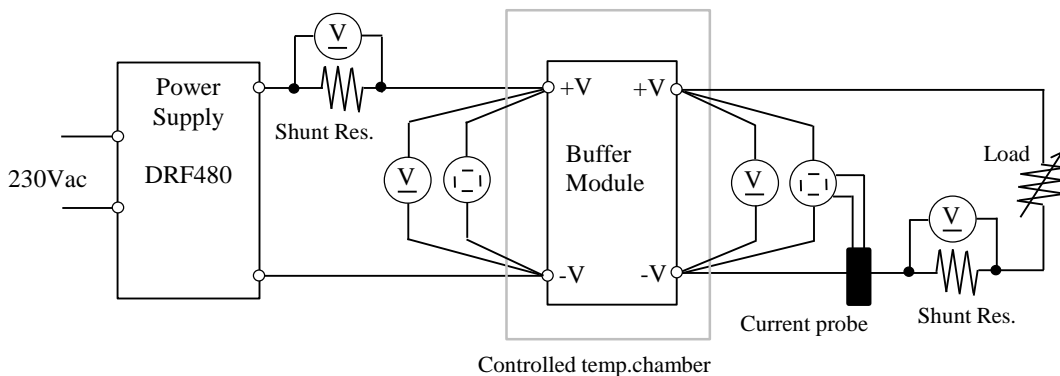
Terminology Used

	Definition
V_{in}	Input voltage
V_{out}	Buffer voltage
I_{in}	Input current
I_{out}	Buffering current
T_a	Ambient temperature

1. Evaluation Method

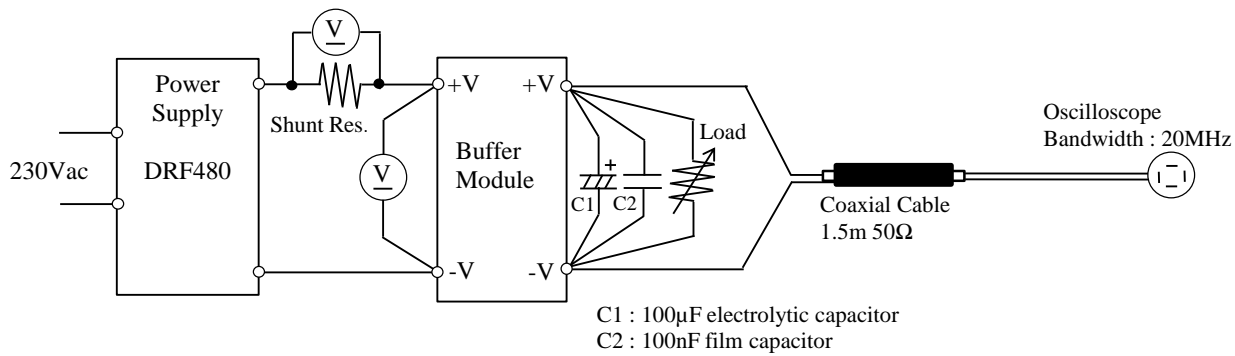
1-1 Circuit 1 used for determination

- Steady state data
- Input over voltage protection (OVP) characteristics
- Buffer time characteristics
- Response to brown out time characteristics

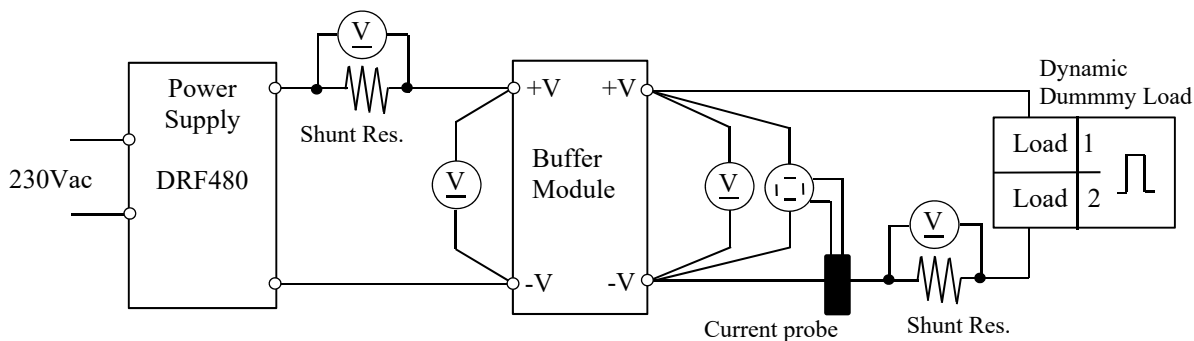


1-2 Circuit 2 used for determination

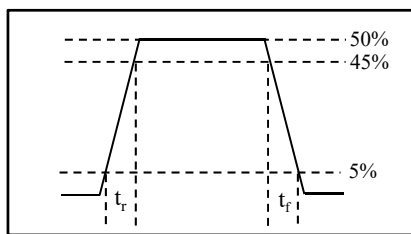
- Ripple and noise waveform on buffer voltage



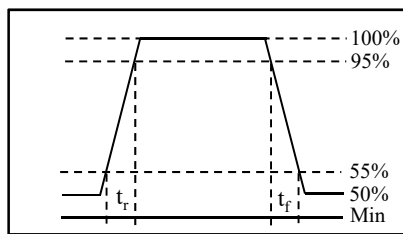
1-3 Circuit 3 used for determination
Dynamic load response characteristics



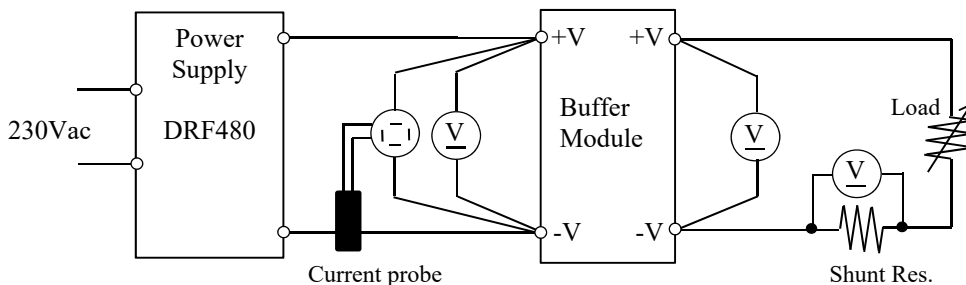
Buffering current waveform
Iout 0% <--> 50%



Buffering current waveform
Iout 50% <--> 100%

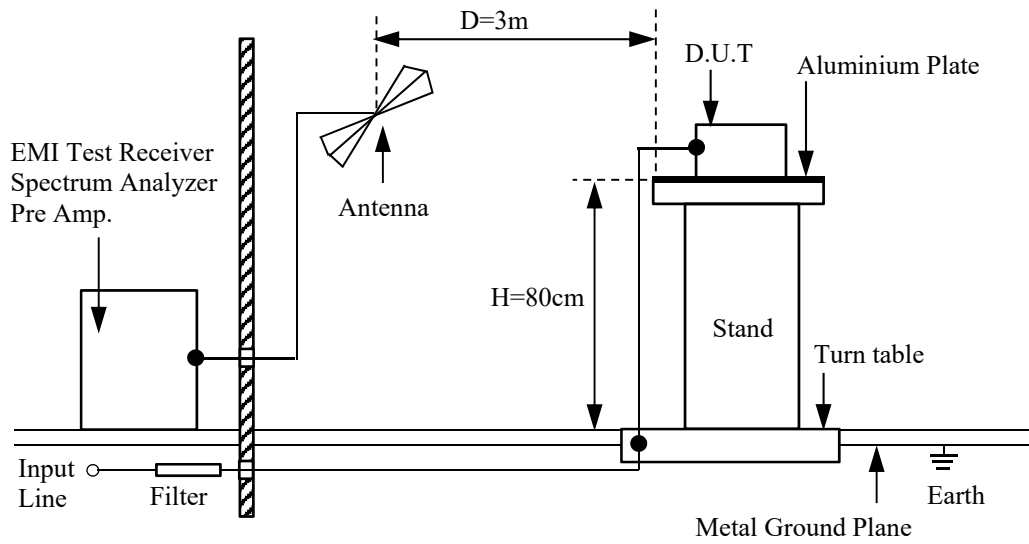


1-4 Circuit 4 used for determination
Inrush current waveform



1-5 Configuration used for determination
EMI Electro-Magnetic Interference characteristics

Radiated Emission



1-6 List of Equipment Used

	EQUIPMENT USED	MANUFACTURER	MODEL NO.
1	DIGITAL STORAGE OSCILLOSCOPE	YOKOGAWA	DLM2054
2	DIGITAL MULTIMETER	YOKOGAWA	TY710
3	CURRENT PROBE/AMPLIFIER	YOKOGAWA	701933
4	DYNAMIC DUMMY LOAD	CHROMA	63106A
5	CONTROLLED TEMP. CHAMBER	ESPEC	SU-241
6	DC SOURCE	GENESIS	GEN60-85
7	DATA ACQUISITION UNIT	KEYSIGHT	34970A
8	EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI
9	LISN	AFJ	AFJ LT32C/10
10	EMI TEST RECEIVER	R&S	ESR26
11	PREAMPLIFIER	SONOMA	310N
12	PREAMPLIFIER	COM-POWER	PAM-103
13	RF ANTENNA	TDK	HLP-3003C
14	BILOG ANTENNA	SCHAFFNER	CBL6112B

2. Characteristics

2-1 Steady state data

(1) Regulation - load, Temperature drift

(a) Fixed Mode

1. Regulation-load

Condition Ta : 25°C

Iout \ Vin	23VDC	24VDC	27VDC	30VDC
0%	22.308	22.305	22.304	22.305
50%	22.242	22.245	22.251	22.252
100%	22.166	22.183	22.182	22.185
Load	0.142V	0.122V	0.122V	0.120V
Regulation	0.634%	0.545%	0.545%	0.536%

2. Temperature drift

Conditions Vin : 24VDC
Iout : 100%

Ta	-25°C	25°C	70°C	Temperature Stability	
Vout	22.25	22.18	22.07	0.18V	0.009%

(b) VIN-1 Mode

1. Regulation-load

Condition Ta : 25°C

Iout \ Vin	24VDC	27VDC	30VDC
5%	22.598	25.632	28.609
50%	22.708	25.700	28.710
100%	22.526	25.458	28.372
Load	0.182	0.242	0.338
Regulation	0.81%	0.95%	1.19%

2. Temperature drift

Conditions Vin : 27VDC
Iout : 100%

Ta	-25°C	25°C	70°C	Temperature Stability	
Vout	26.162	25.458	24.954	1.208V	0.049%

2-1 Steady State Data

(2) Ripple and noise on buffer voltage vs. input voltage

(a) Fixed Mode

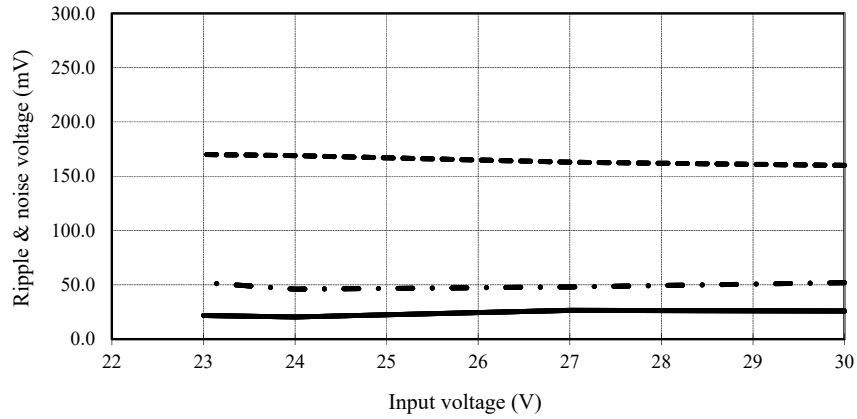
Conditions

I_{out} : 100%

T_a : -25°C

: 25°C

: 70°C



(b) VIN-1 Mode

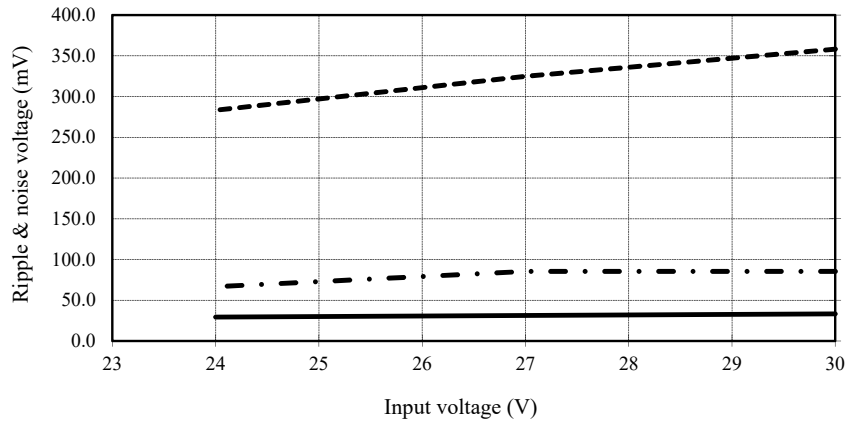
Conditions

I_{out} : 100%

T_a : -25°C

: 25°C

: 70°C



2-1 Steady State Data

(3) Efficiency vs. load current

Ready mode

Conditions

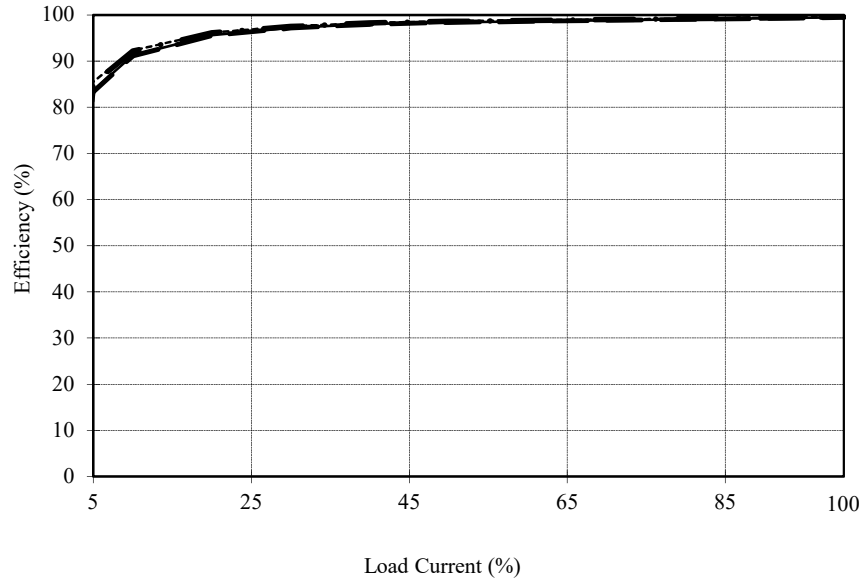
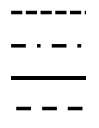
Ta : 25°C

Vin : 23VDC

24VDC

27VDC

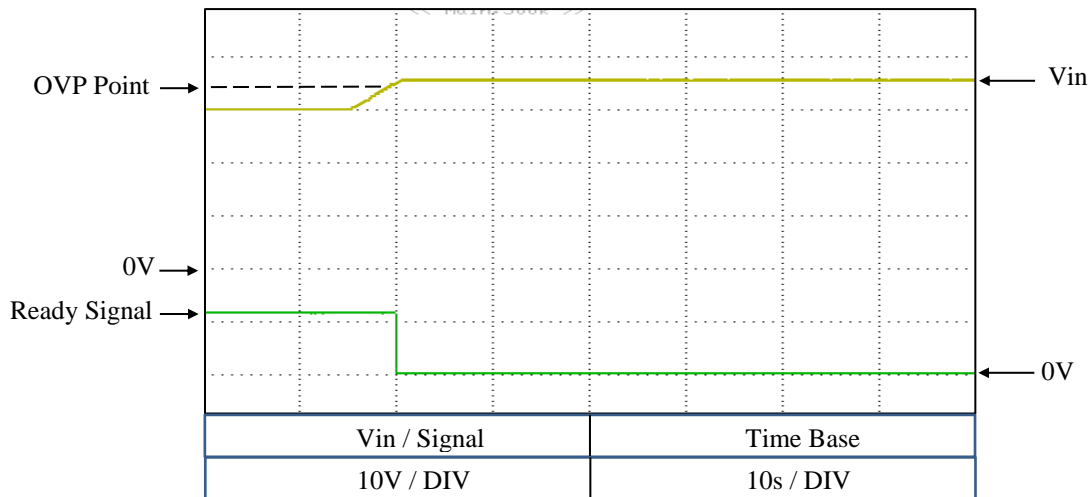
30VDC



2-2 Input over voltage protection (OVP) characteristics

Ready Mode

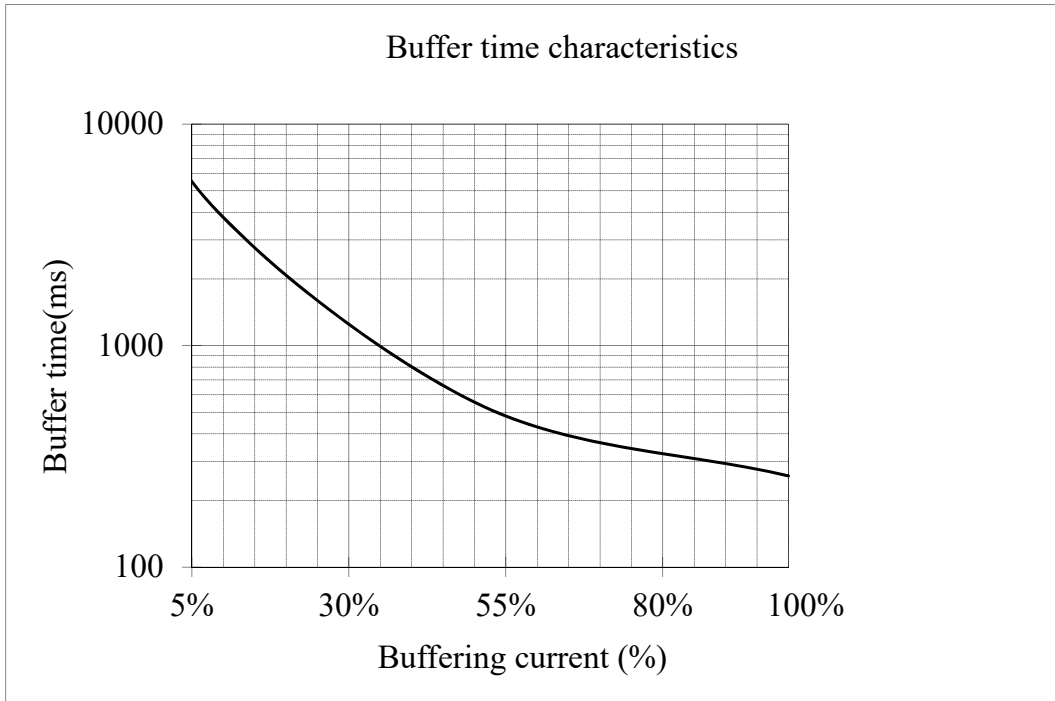
Conditions Ta : 25°C
Iout : 0%



2-3 Buffer time characteristics

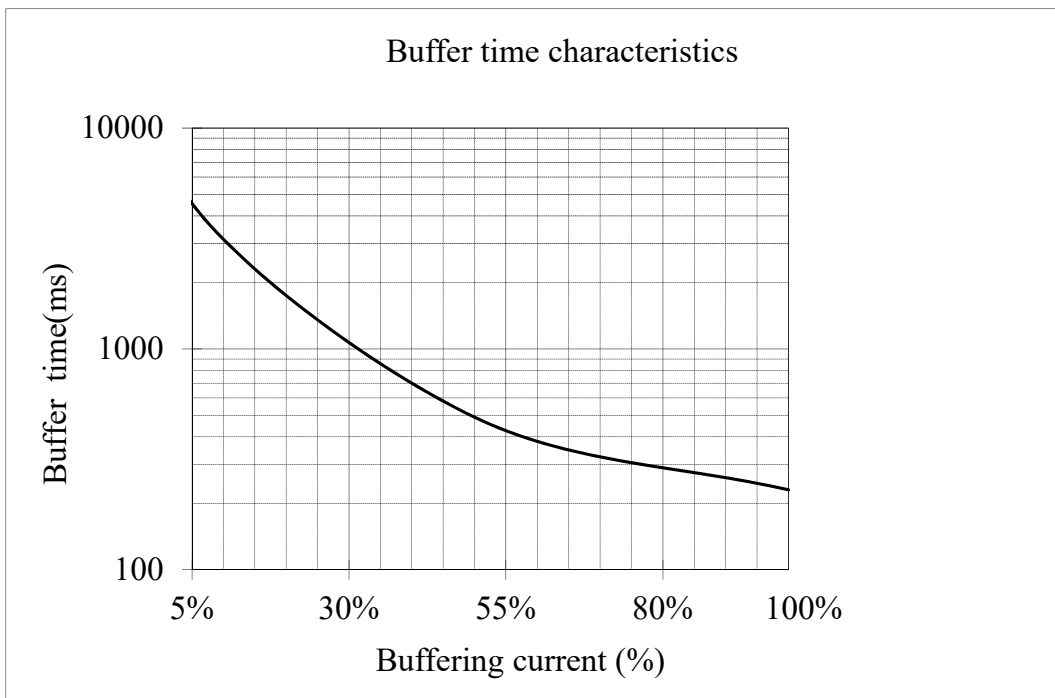
(a) Fixed mode

Conditions Vin : 24VDC
Ta : 25°C



(b) VIN-1 mode

Conditions Vin : 27VDC
Ta : 25°C



2-4 Dynamic load response characteristics

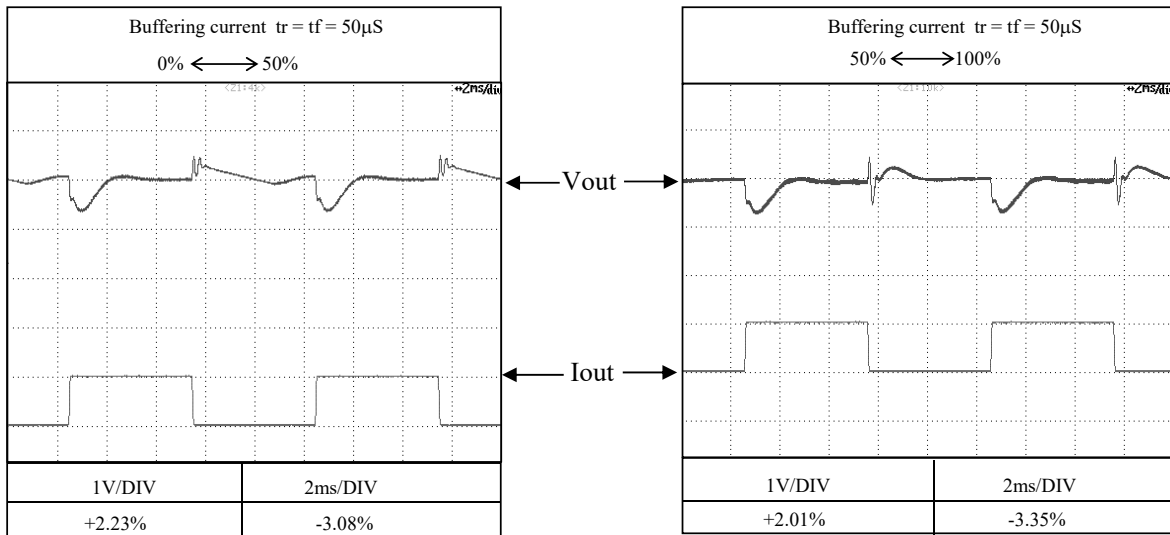
(a) Fixed Mode

Conditions

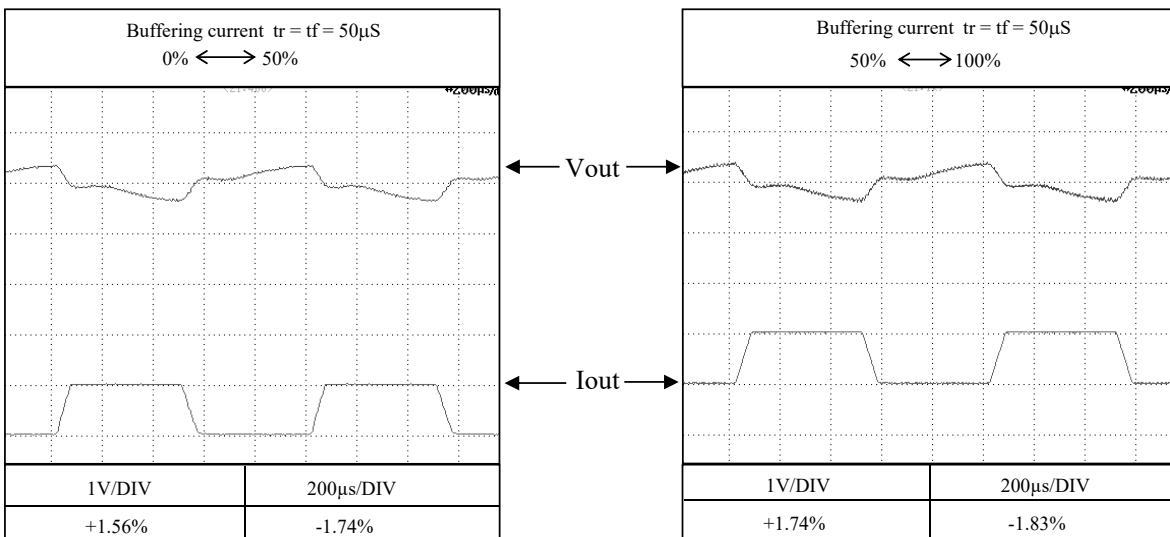
Vin : 24VDC

Ta : 25°C

f=100Hz



f=1KHz

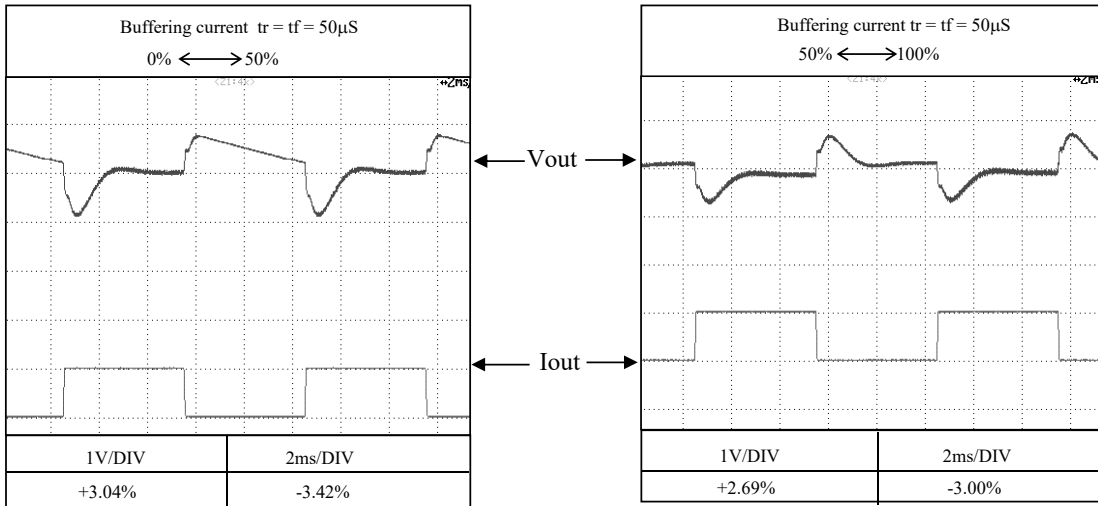


2-4 Dynamic load response characteristics

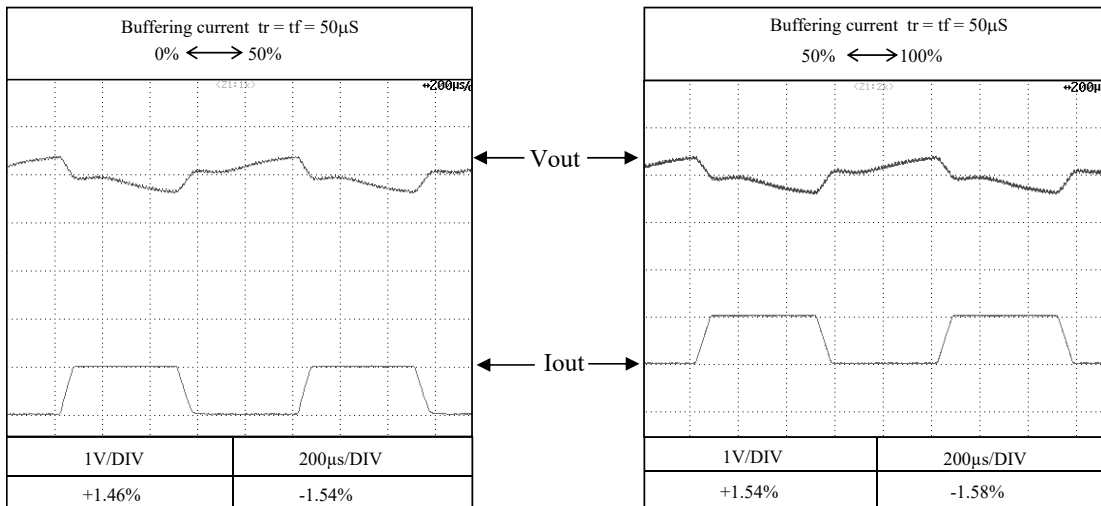
(b) VIN-1 Mode

Conditions : Vin : 27VDC
Ta : 25°C

f=100Hz



f=1KHz

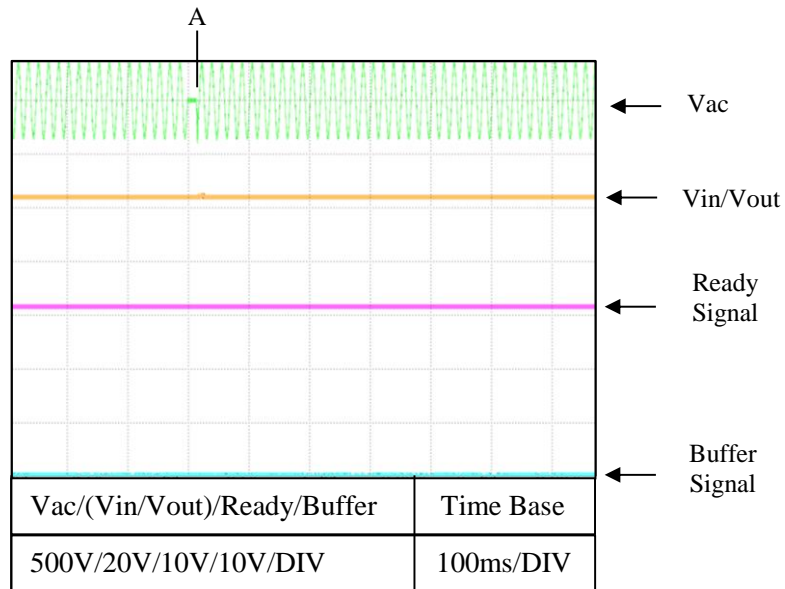


2-5 Response to brown out time characteristics

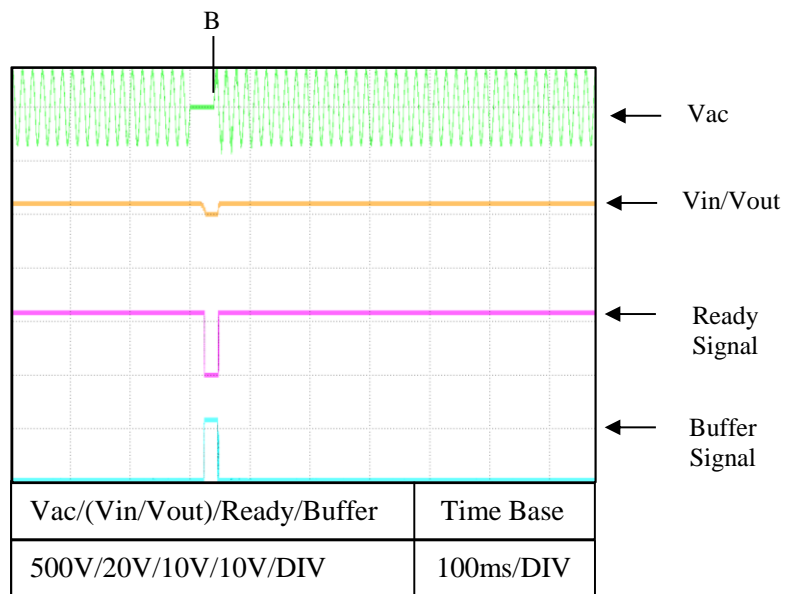
(a) Fixed Mode

Conditions
 Vin : 24VDC
 Iout : 100%
 Ta : 25°C

A=15ms



B=40ms

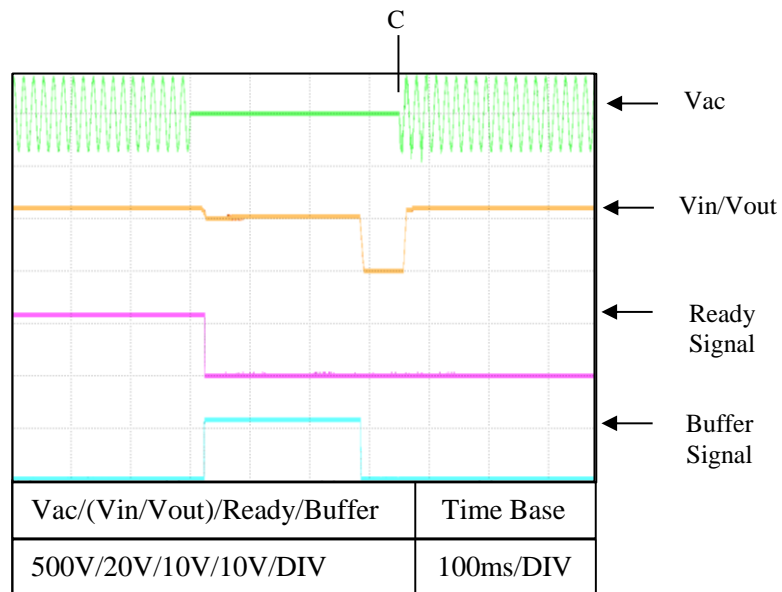


2-5 Response to brown out time characteristics

(a) Fixed Mode

Conditions Vin : 24VDC
Iout : 100%
Ta : 25°C

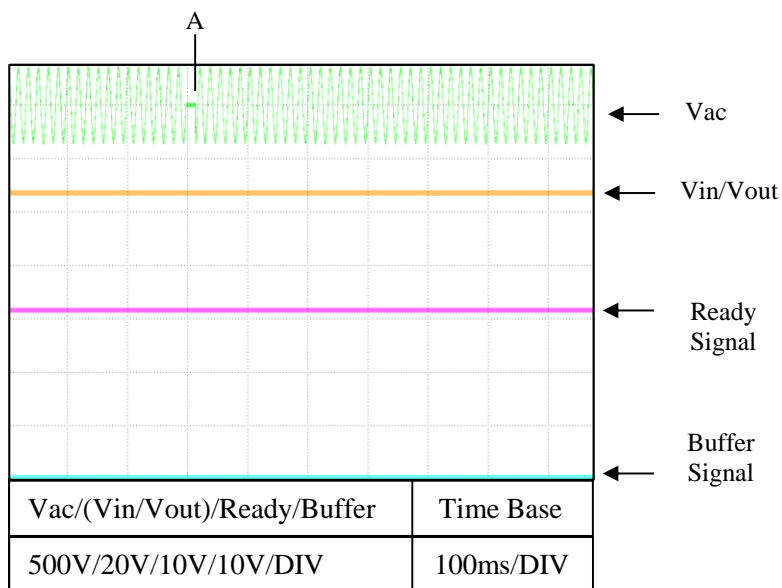
C=350ms



(b) VIN-1 Mode

Conditions Vin : 27VDC
Iout : 100%
Ta : 25°C

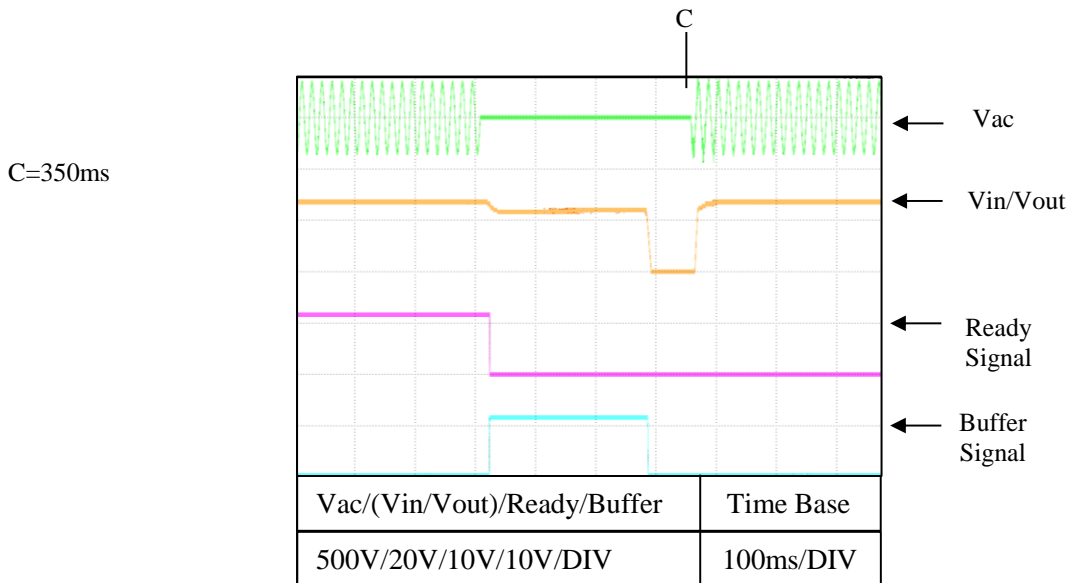
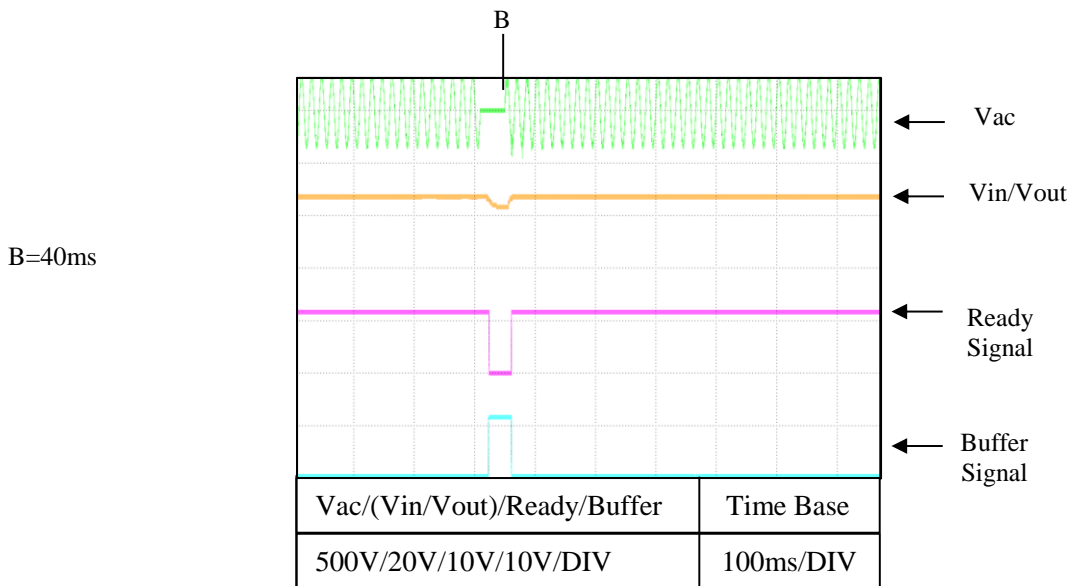
A=15ms



2-5 Response to brown out time characteristics

(b) VIN-1 Mode

Conditions
 Vin : 27VDC
 Iout : 100%
 Ta : 25°C

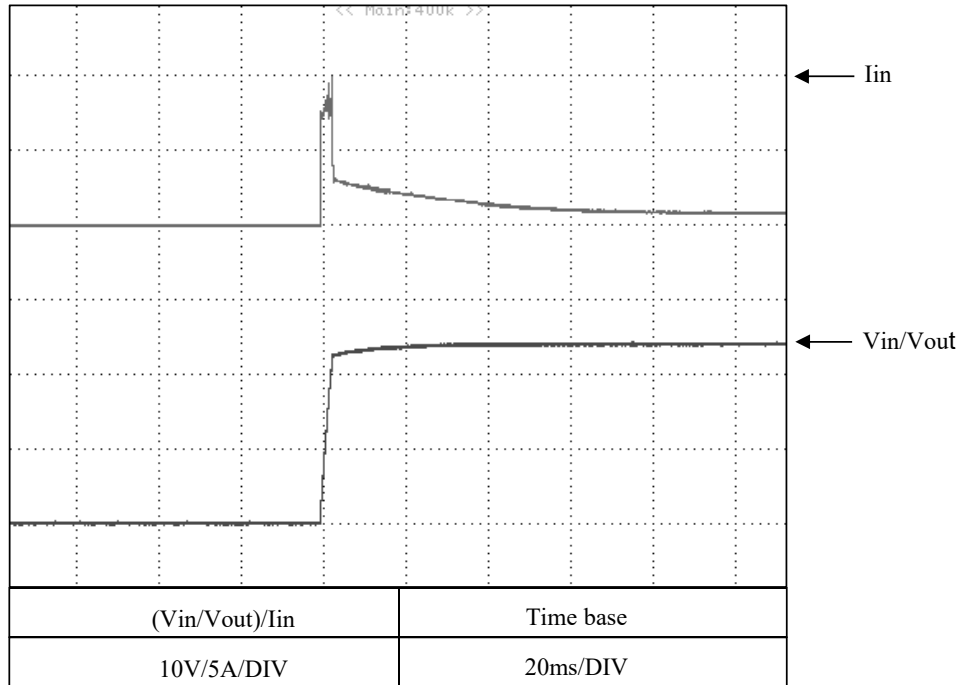


2-6 Inrush current waveform

Ready mode

Conditions

V_{in} = 24VDC
T_a = 25°C



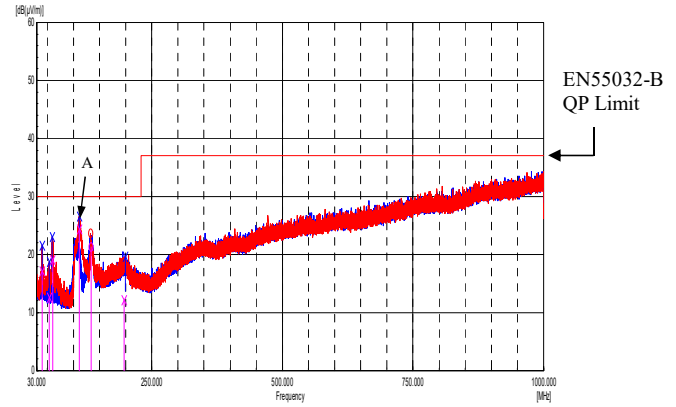
2-7 Electro-Magnetic Interference characteristics

Radiated Emission

Ready mode

Conditions: Vin : 24VDC
 Iout : 0%
 — : Horizontal
 — : Vertical

Point A (134.304 MHz)		
Limit (dBuV/m)	Measured (dBuV/m)	(P)
30	21.30	H



Limits for CISPR32-B is the same as EN55032-B.

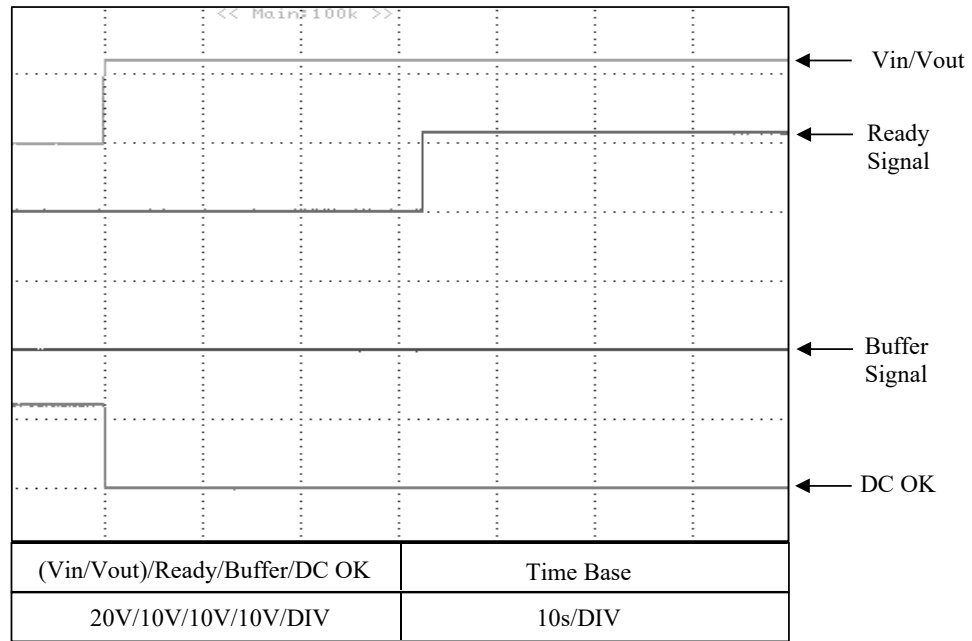
Indication is peak values.

2-8 Signals timing characteristics

(a) Fixed mode

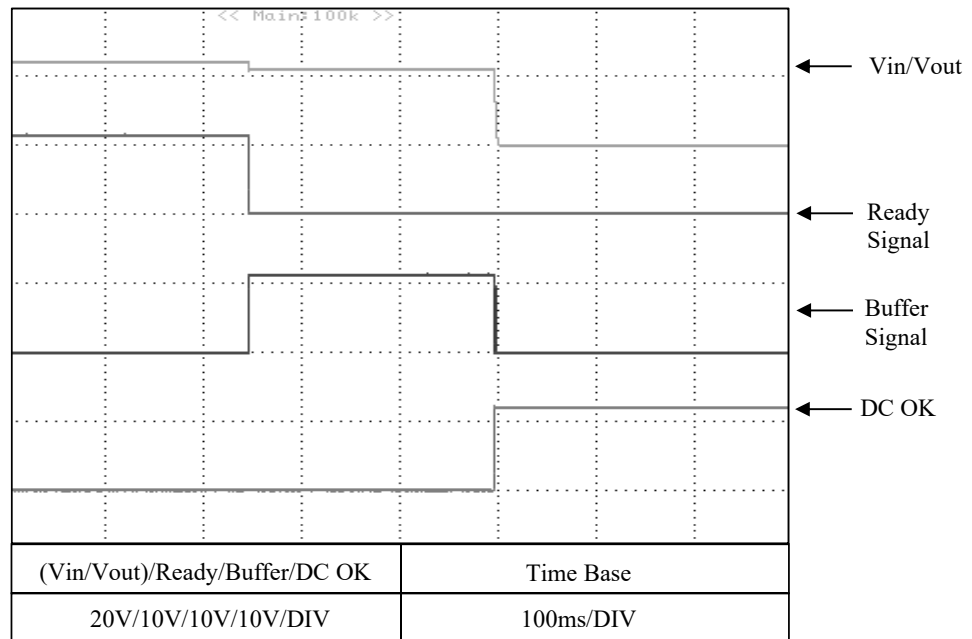
(1) Input start up phase, Ready mode

Conditions Vin : 24VDC
Ta : 25°C



(2) Input shutdown phase, Buffer mode

Conditions Vin : 24VDC
Iout : 20A
Ta : 25°C

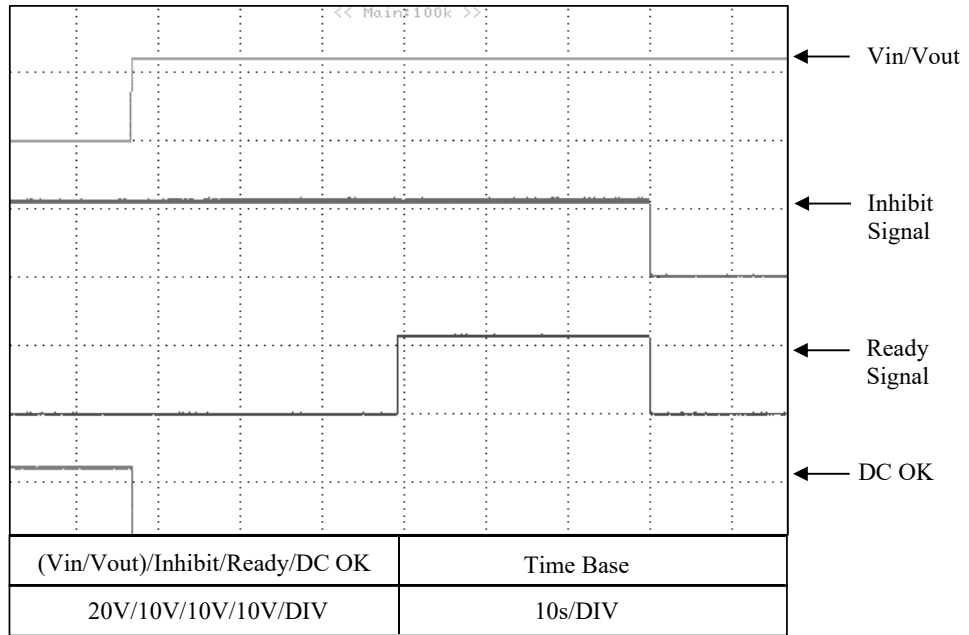


2-8 Signals timing characteristics

(a) Fixed mode

(3) Ready mode, Inhibit operation

Conditions Vin : 24VDC
Ta : 25°C

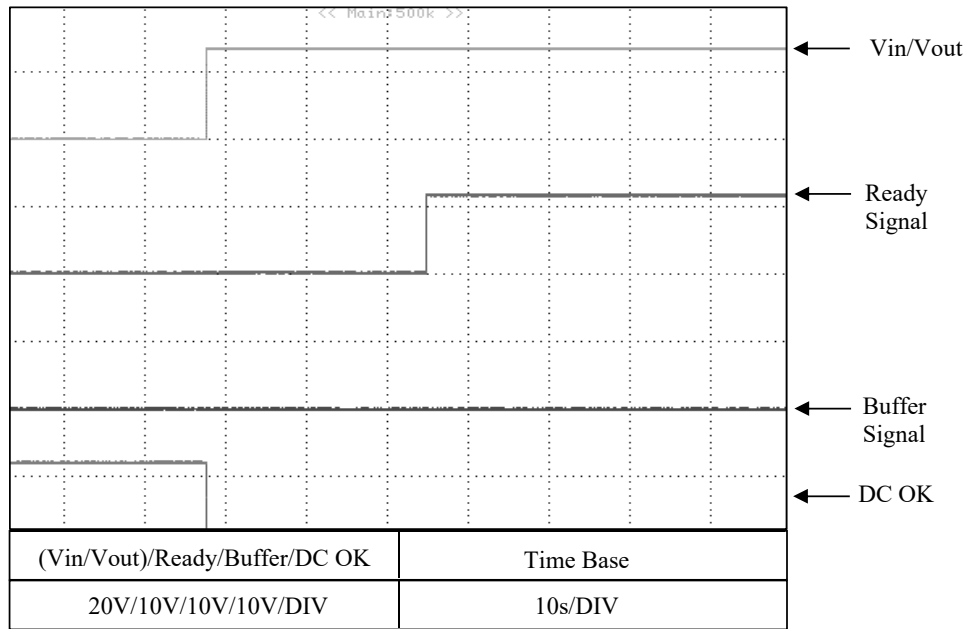


2-8 Signals timing characteristics

(b) VIN-1 mode

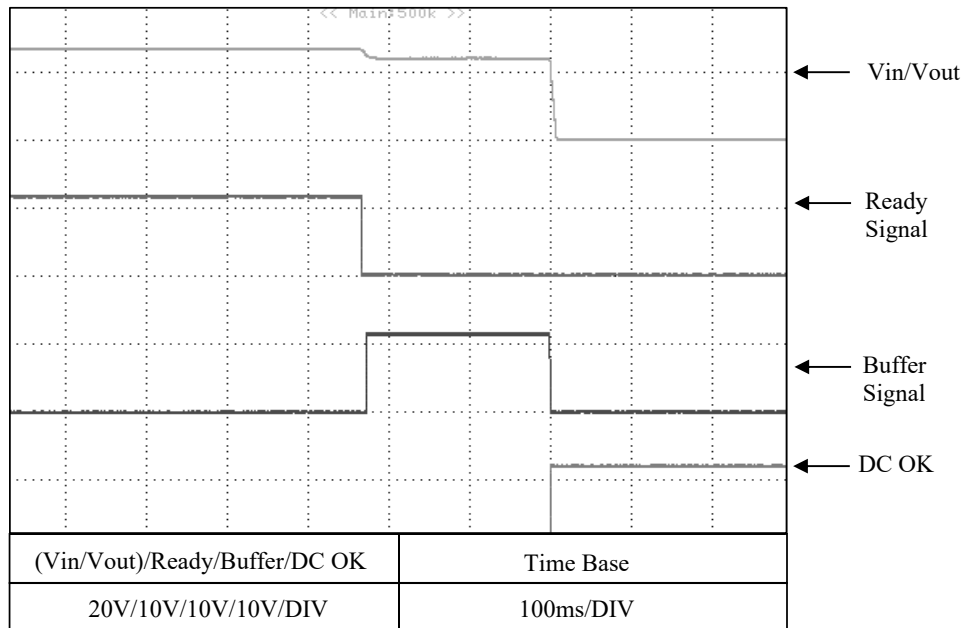
(1) Input start Up phase, Ready mode

Conditions Vin : 27VDC
Ta : 25°C



(2) Input shutdown phase, Buffer mode

Conditions Vin : 27VDC
Iout : 20A
Ta : 25°C

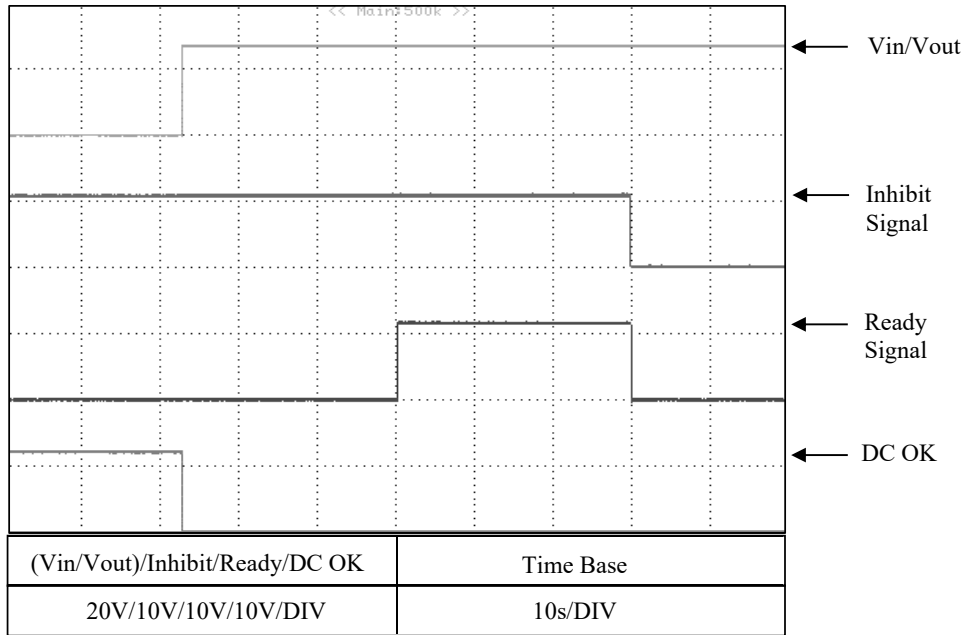


2-8 Signals timing characteristics

(b) VIN-1 mode

(3) Ready mode, Inhibit operation

Conditions Vin : 27VDC
Ta : 25°C



2-9 Parallel operation signals timing characteristics

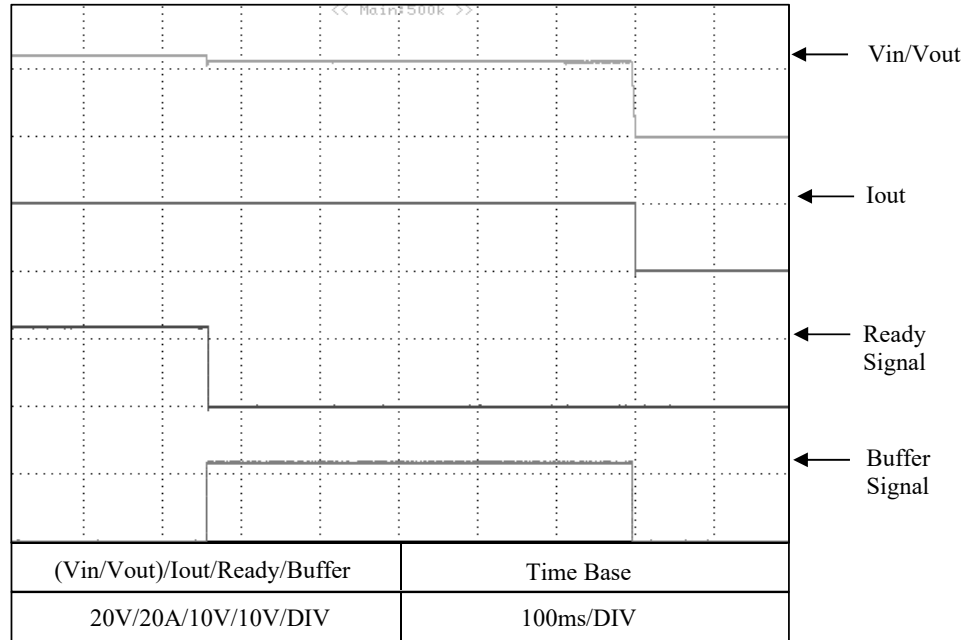
Input shutdown phase, Buffer mode

(a) Fixed mode

Unit in parallel = 2

Conditions

Vin : 24VDC
Iout : 20A
Ta : 25°C



(b) VIN-1 mode

Unit in parallel = 2

Conditions

Vin : 27VDC
Iout : 20A
Ta : 25°C

