

7-2 Power

7-2-1 About S.M.P.S (Ringing Choke Converter Method)

■ Terms

- 1) 1st : Common power input to 1st winding.
- 2) 2nd : Circuit followings output winding of transformer.
- 3) f (Frequency) : Switching frequency (T : Switching cycle)
- 4) Duty : $(T_{on}/T) \times 100$

7-2-2 Circuit description [FLY-Back RCC(Ringing Choke Converter)] Control

(a) AC Power Rectification/Smoothing Terminal

- 1) A01~04 : Convert AC power to DC (Wave rectification).
- 2) CIS01 : Smooth the voltage converted to DC.
- 3) LIS01, LIS02, CIS04, CIS05 : Noise removal at power input/output.
- 4) RIS04 : Rush current limit resistance at the moment of power cord insertion.
 - Without PLRU1, the bridge diode might be damaged as the rush current increases.

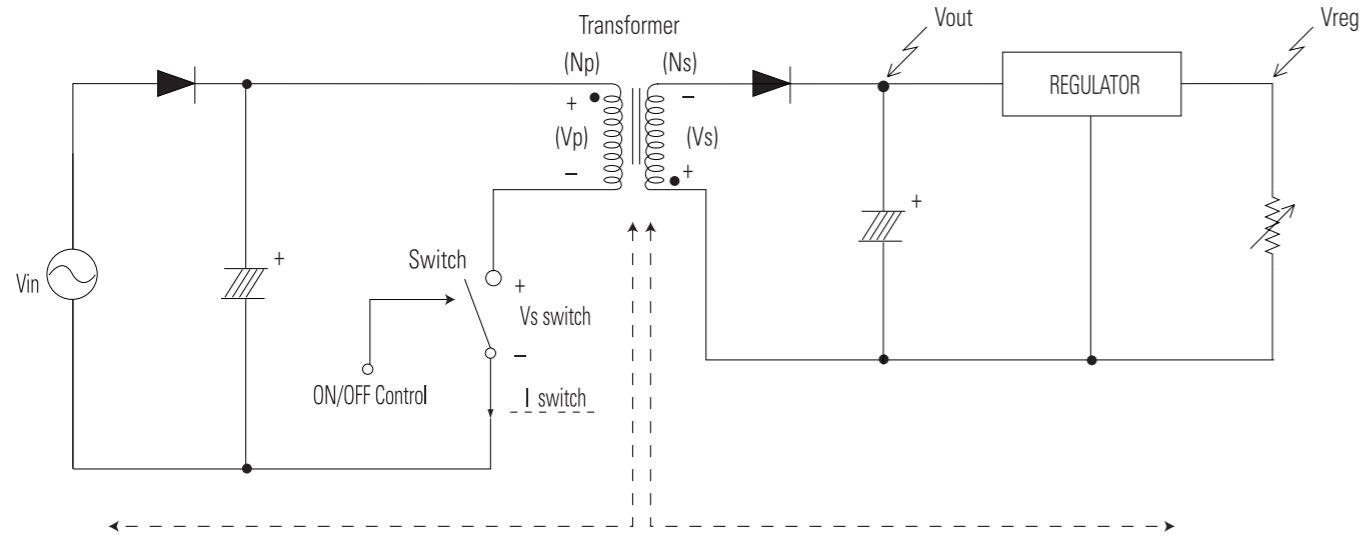
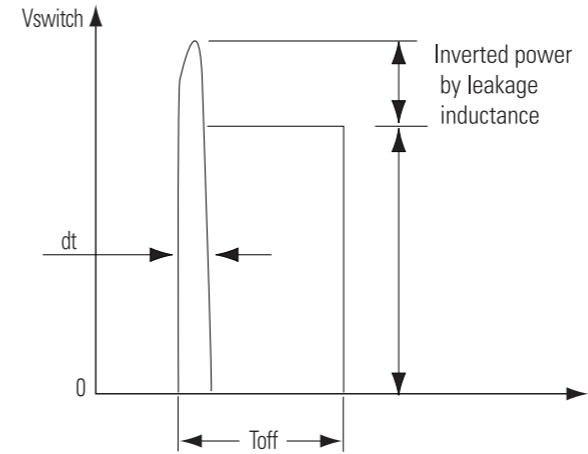


Fig. 7-1



(b) SNUBBER Circuit :
RIS02, RIS03, CIS08, CIS07, DIS05

- 1) Prevent residual high voltage at the terminals of switch during switch off/Suppress noise. High inverted power occurs at switch off, because of the 1st winding of transformer : $(V = -L1 \times di/dt)$. L1 : Leakage Inductance
A very high residual voltage exist on both terminals of ICIS01 because dt is a very short.
- 2) SNUBBER circuit protects ICIS01 from damage through leakage voltage suppression by RC, (Charges the leakage voltage to DIS05 and CIS08 and discharges to RIS03, RIS02).
- 3) CIS07 : For noise removal

Fig. 7-2

(c) ICIS01 Vcc circuit

- 1) ICIS01, RIS05, RIS07, RIS08 : ICIS01 driving resistance (ICIS01 works through driving resistance at power cord in)
- 2) ICIS01 Vcc : RIS05, RIS07, RIS08
 - ① Use the output of transformer as Vcc, because the current starts to flow into transformer while ICIS01 is active
 - ② Rectify to DIS07 and smooth to CIS09.
 - ③ Use the output of transformer as ICIS01 Vcc : The loads are different before and after ICIS01 driving. (Vcc of ICIS01 decreases below OFF voltage, using only the resistance due to load increase after ICIS01 driving.)

(d) Feedback Control Circuit

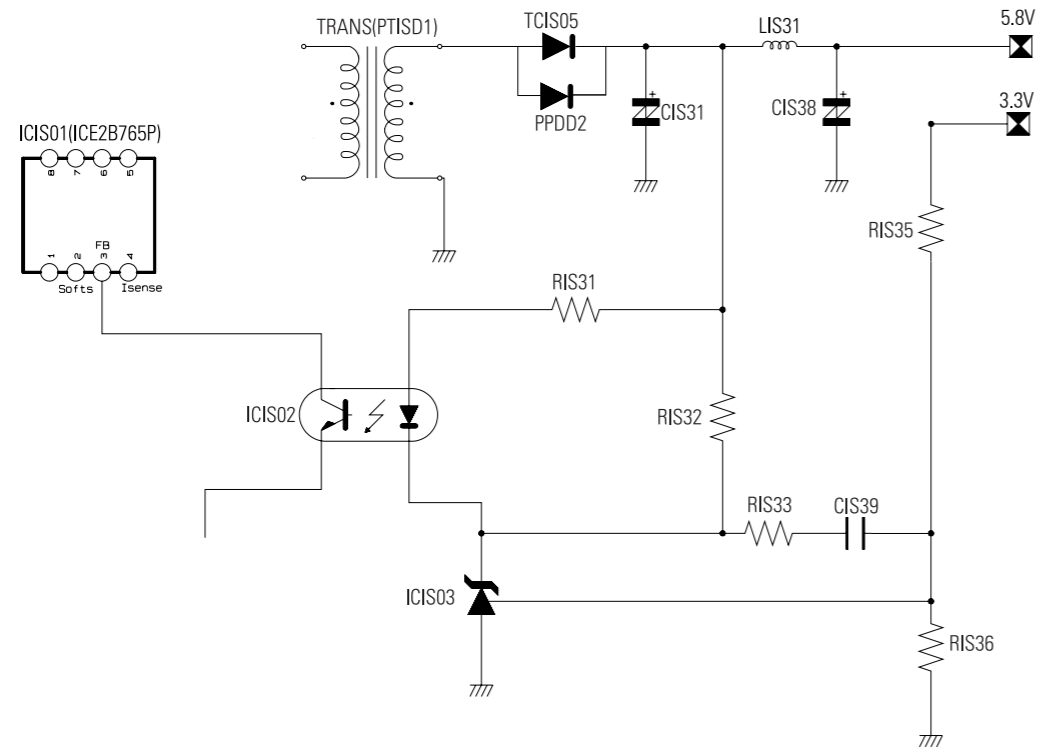


Fig. 7-3

- 1) F/B terminal of PQIZ1 determines output duty cycle.
- 2) C-E (Collector-Emitter) of PQIZ1 and F/B potential of PQIZ1 are same.

7-2-3 Internal Block Diagram (Internal Block Diagram of S.M.P.S Circuit)

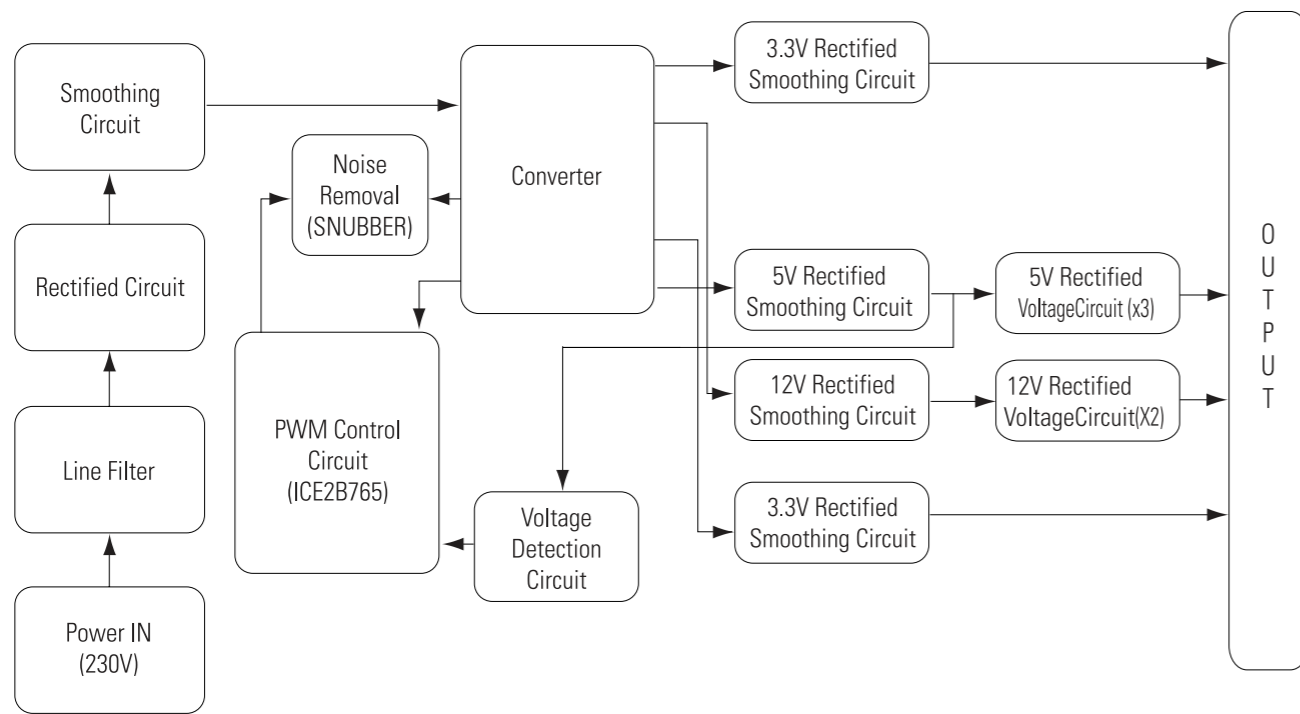
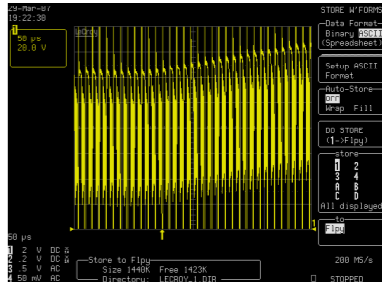
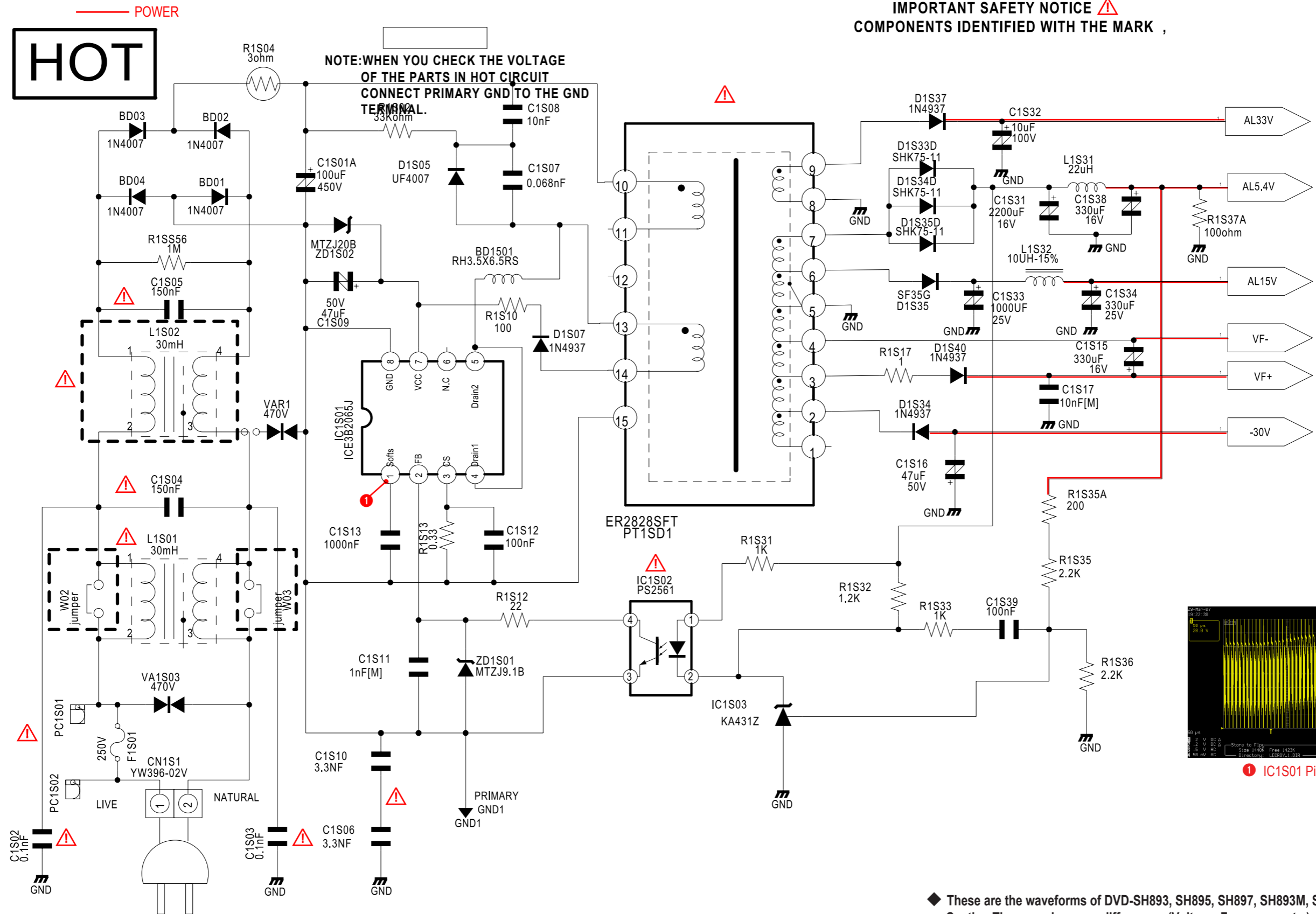


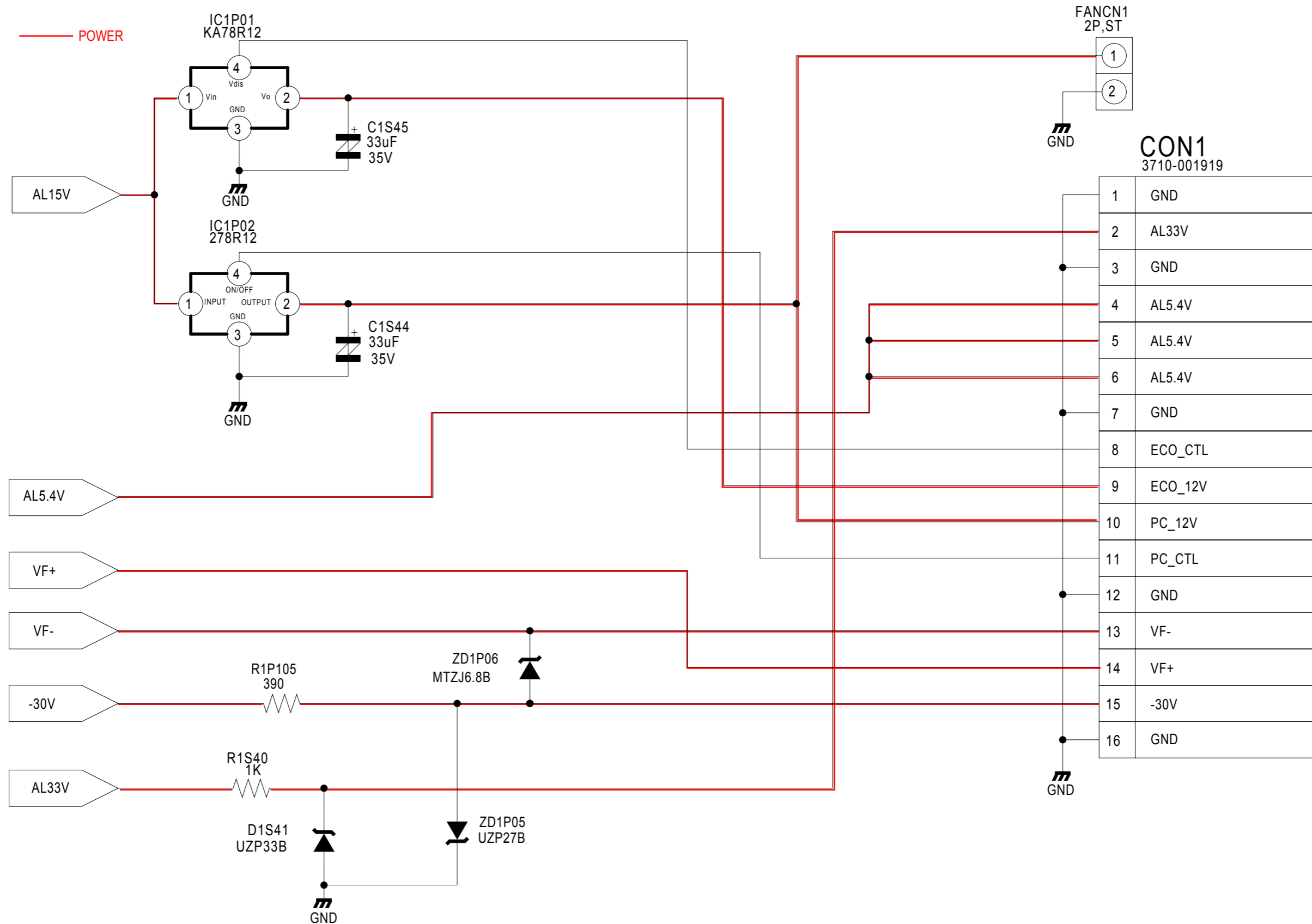
Fig. 7-4

7-3 S.M.P.S_01 (SMPS PCB)



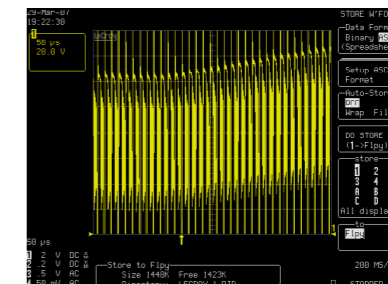
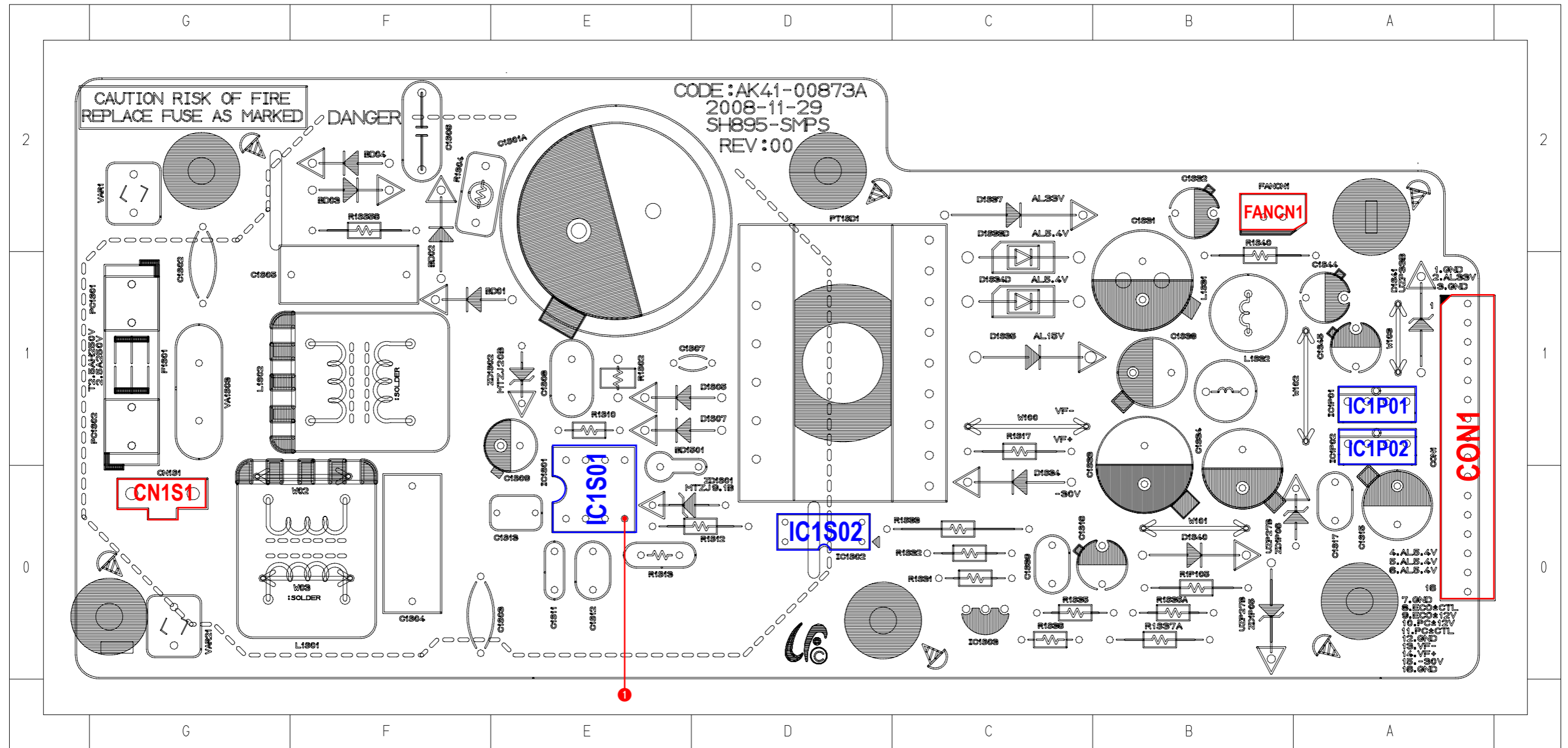
◆ These are the waveforms of DVD-SH893, SH895, SH897, SH893M, SH895M, SH897M. Caution There can be some differences (Voltage, Frequency, stc.) among cameras.

7-4 S.M.P.S_02 (SMPS PCB)



6-3 S.M.P.S PCB

COMPONENT SIDE



① IC1S01 Pin(1)

LOC.NO	X-Y
CON1	A-0
IC1P01	A-1
IC1P02	A-1
FANCN1	A-2
IC1S02	D-0
IC1S01	E-0
CN1S1	G-0

CONDUCTOR SIDE

