

## 7. Schematic Diagrams


<b>7-1 All block Diagram</b>	<b>7-2</b>
<b>7-2 Power</b>	<b>7-3</b>
<b>7-3 S.M.P.S (S.M.P.S PCB)</b>	<b>7-5</b>
<b>7-4 Front Key (S.M.P.S PCB)</b>	<b>7-6</b>
<b>7-5 Video (Main PCB)</b>	<b>7-7</b>
<b>7-6 Audio (Main PCB)</b>	<b>7-8</b>
<b>7-7 Memory (Main PCB)</b>	<b>7-9</b>
<b>7-8 Decoder (Main PCB)</b>	<b>7-10</b>
<b>7-9 Power (Main PCB)</b>	<b>7-11</b>
<b>7-10 Connector (Power Key PCB)</b>	<b>7-12</b>
<b>7-11 Power Key (Power Key PCB)</b>	<b>7-13</b>
<b>7-12 Scart (Scart PCB)</b>	<b>7-14</b>
<b>7-13 Scart Connector (Scart PCB)</b>	<b>7-15</b>
<b>7-14 Karaoke (Karaoke PCB)</b>	<b>7-16</b>

### Note

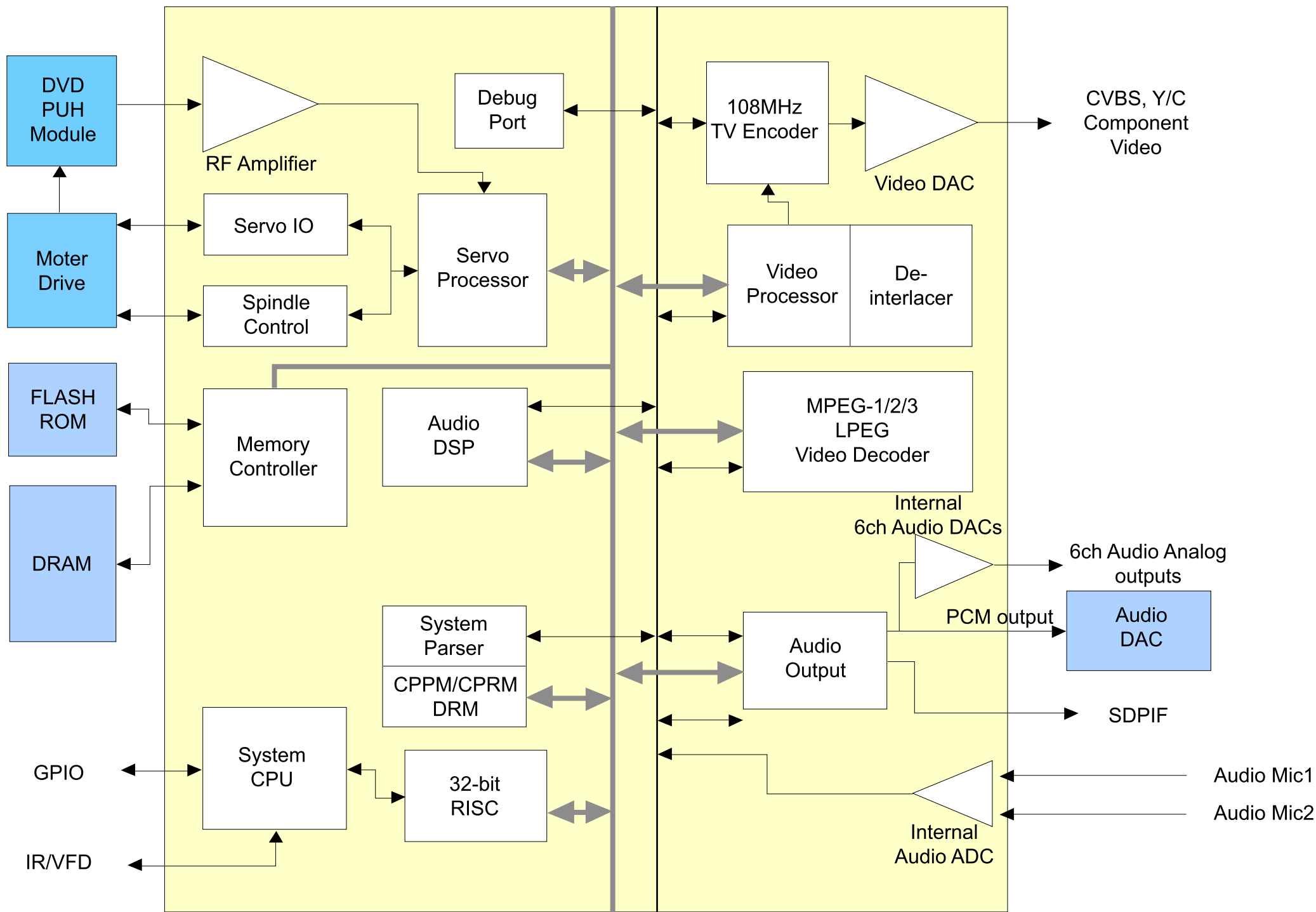
- For schematic Diagram
- Resistors are in ohms, 1/8W unless otherwise noted.

**Special note :**  
Most semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the "electrostatically sensitive (ES) devices" section of this service manual.

**Note :**  
Do not use the part number shown on this drawing for ordering. The correct part number is shown in the parts list (may be slightly different or amended since this drawing was prepared).

**Important safety notices :**  
Components identified with the mark  have the special characteristics for safety. When replacing any of these components. Use only the same type.

7-1 All block Diagram



## 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) PDS01, PDS02, PDS03, PDS04 : Convert AC power to DC(Full wave rectification).
- 2) PEF10 : Smooth the voltage converted to DC.
- 3) PCD01, PCD02, PBS01 : Noise removal at power input/output.
- 4) PVA1 : SMPS protection at power surge input.

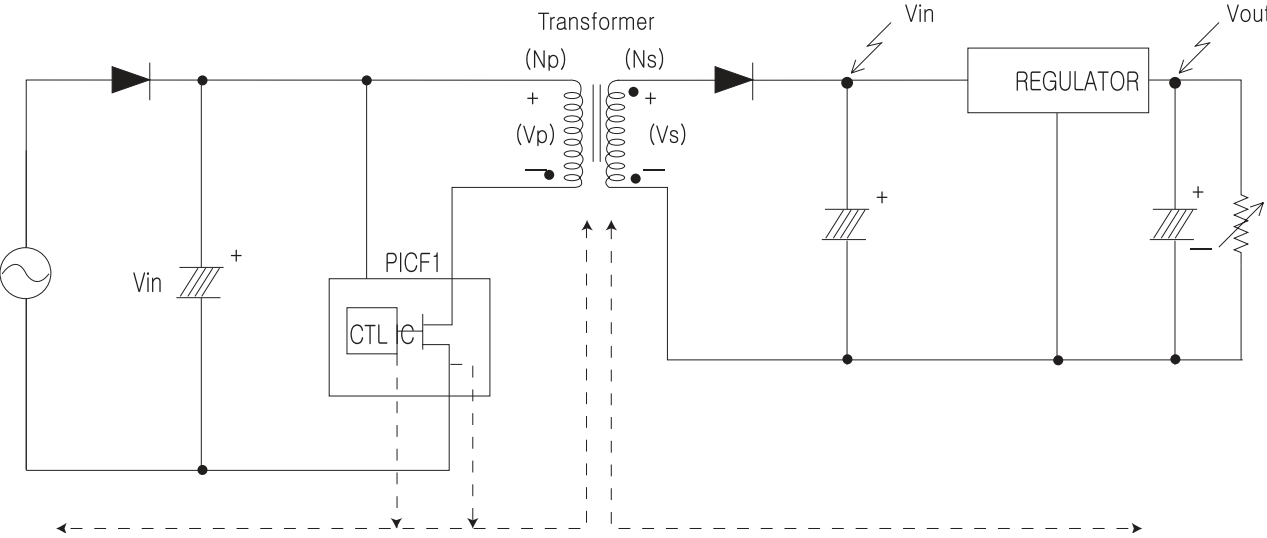
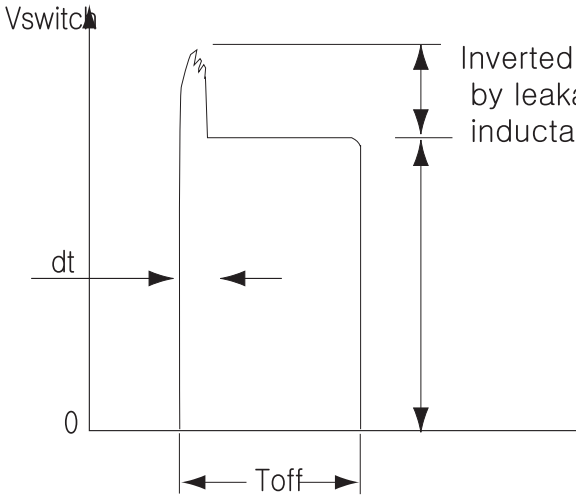


Fig. 7-1



(b) SNUBBER Circuit :  
PDS11, PCD12, PRS13, PCD11, PPS12

- 1) Prevent residual high voltage at the terminals of switch during switch off/Suppress noise. High inverted power occurs at switch (PQR11) off, because of the 1st winding of transformer :  $(V = -L1 \times di/dt)$ . L1 : Leakage Induction) A very high residual voltage exist on both terminals of PICF1 4, 5~8pin because dt is a very short.
- 2) SNUBBER circuit protects PQR11 from damage through leakage voltage suppression by RC, (Charges the leakage voltage to PDS11, PER13, PCD12 and discharges to PRS11, PRS12).

Fig. 7-2

(c) Driving circuit

When  $V_{in}$  supplied, driving current  $I_g$  occurs through the PICF1. By this  $I_1 (=H_{fe} \times I_g)$  occurs through the PICF1 and the  $V_b$  is induced to base winding coil NB. By induced  $V_b$ ,  $I_b$  start flow and the VCC voltage of PQR11 is sustained stable.  $I_b$  is constant and  $I_1$  increases in Proportion to time. After constant time passed  $I_b$  become to shortage and PICF1 is cut OFF (S/W OFF).

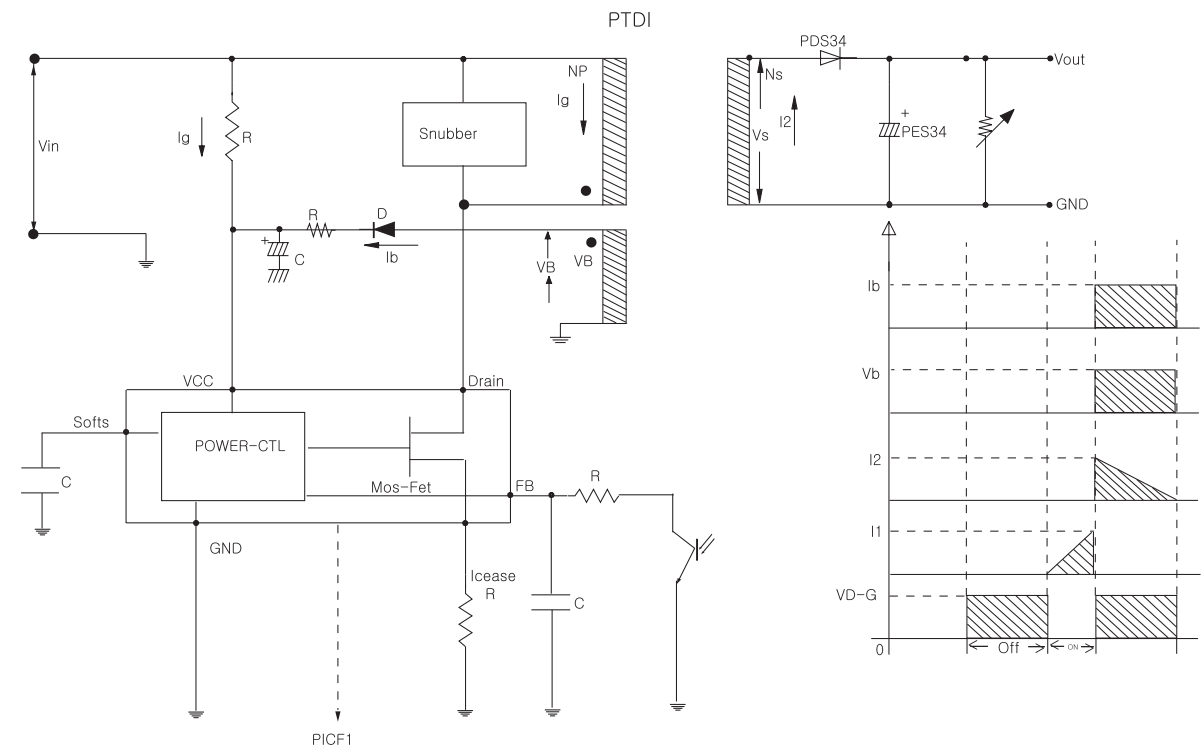


Fig. 7-3 Driving Circuit

(d) Feedback Control Circuit

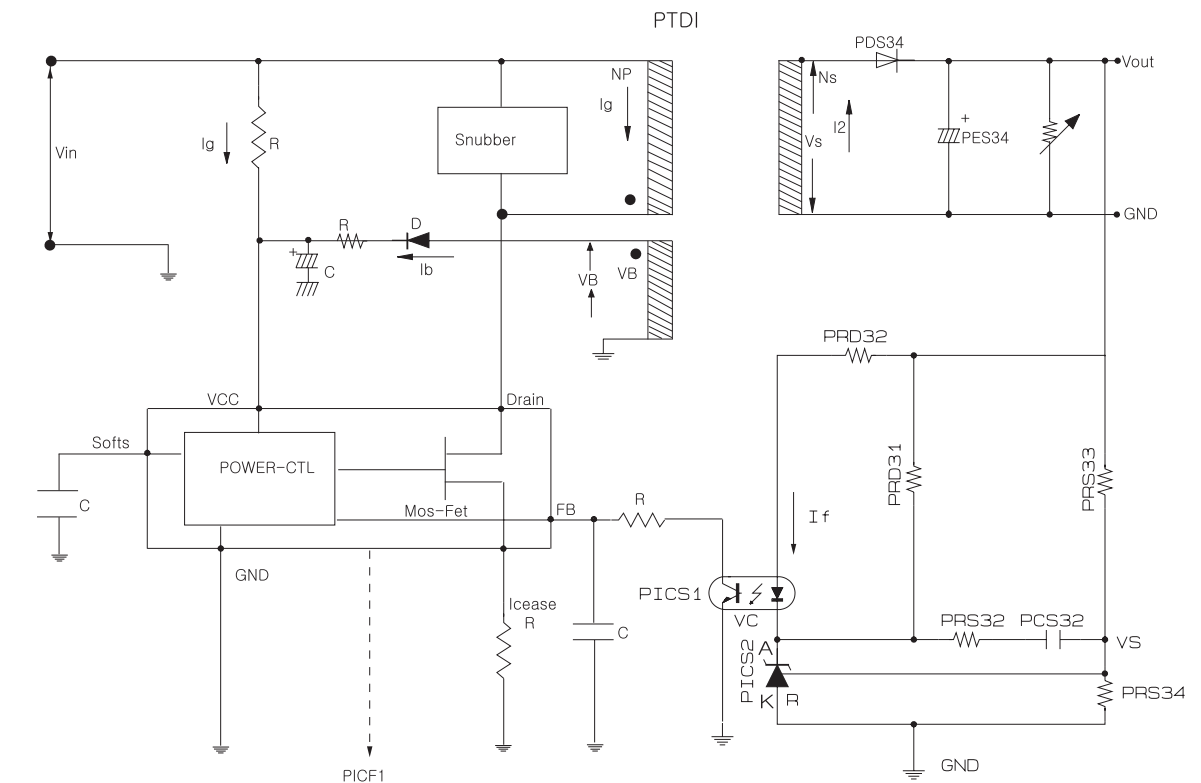


Fig. 7-4

◆ Operation descriptions

- 1) Internal OP-Amp '+' base potential of PICS2 is 2.5V and external '-' input potential is connected with PRS33 and PRS34 to maintain  $V_{out}$  of 4.4V.
- 2) If load of 4.4V terminal increase (or AC inout voltage decrease) and  $V_{out}$  decrease over 4.4V, Then : PICS2 "R" potential decrease over 2.5V --> PICS2 A-K BASE Current decrease --> PICS2 A-K Current decrease --> PICS1 DIODE Current decrease --> PICS1 C-E Current decrease --> PICS1 C-E Voltage increase -> PICS1 F-B Voltage increase --> OUT DUTY increase TRANS Primary Current Increase --> TRANS Primary Power increase -->  $V_{out}$  increase -->  $V_{out}$  maintain 4.4V

- PRD31, PRD32 : Reduce 4.4V overshoot.
- PRS32, PCS32 : Prevent PICS2 oscillation (for phase correction).

7-2-3 Internal Block Diagram

◆ Internal Block Diagram

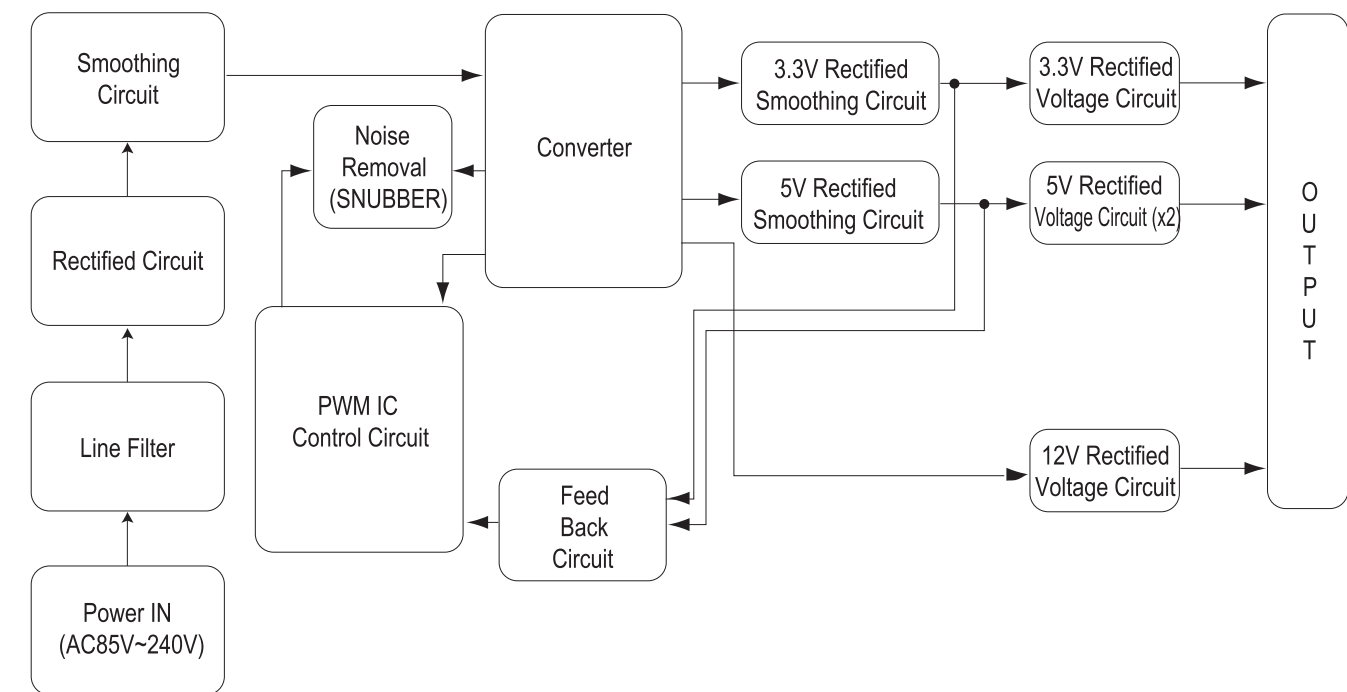
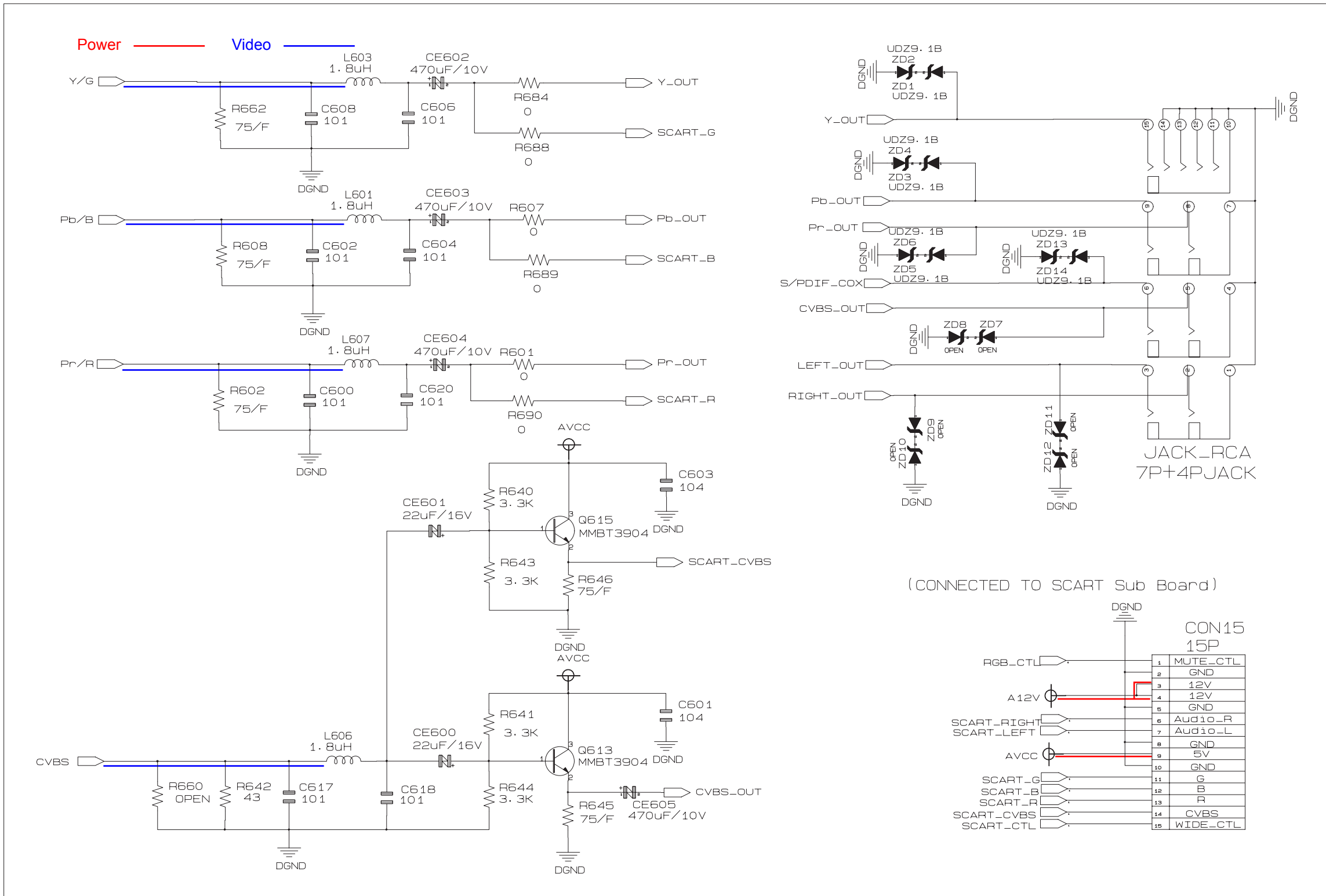


Fig. 7-5

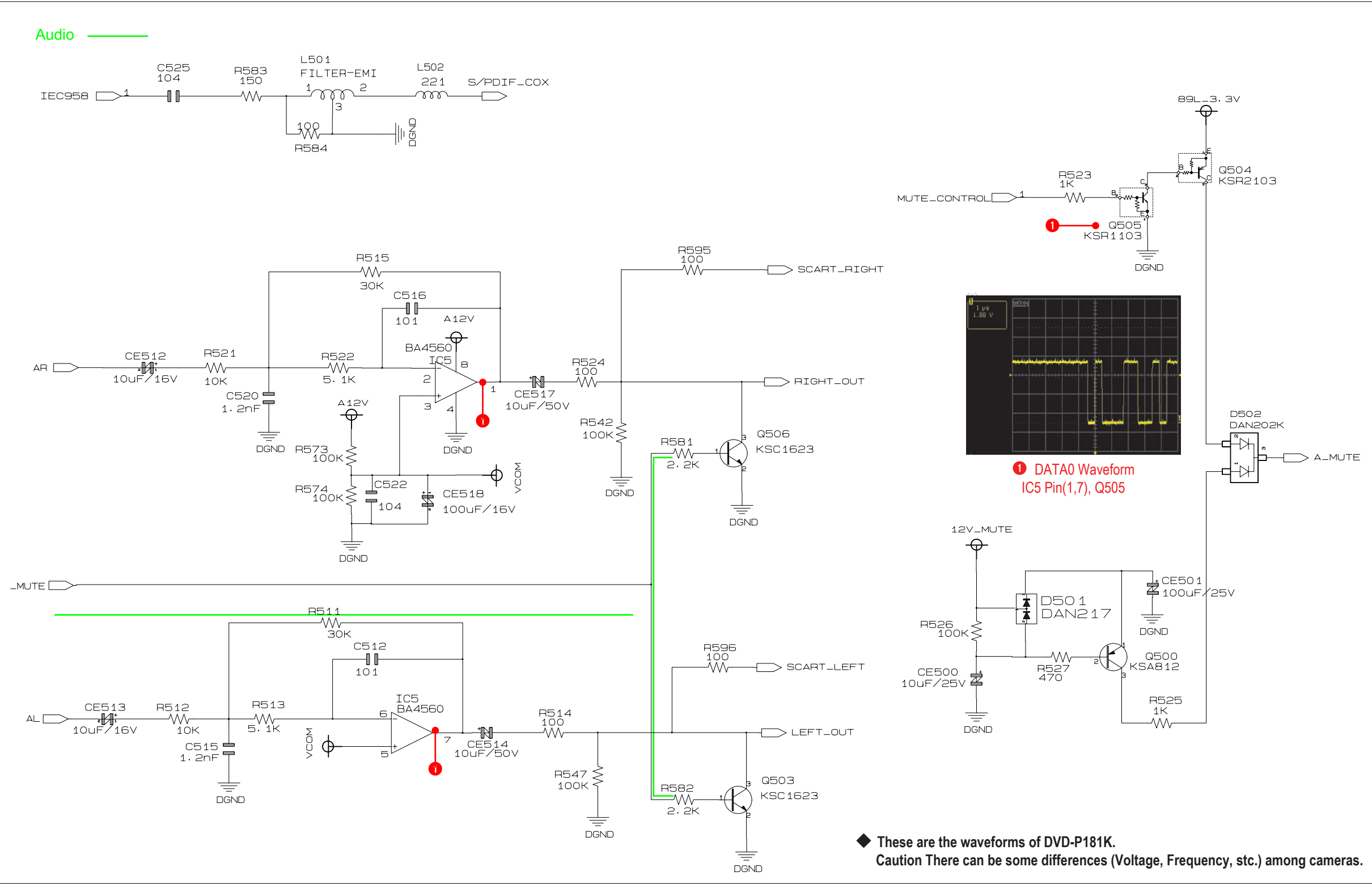




# 7-5 Video (Main PCB)

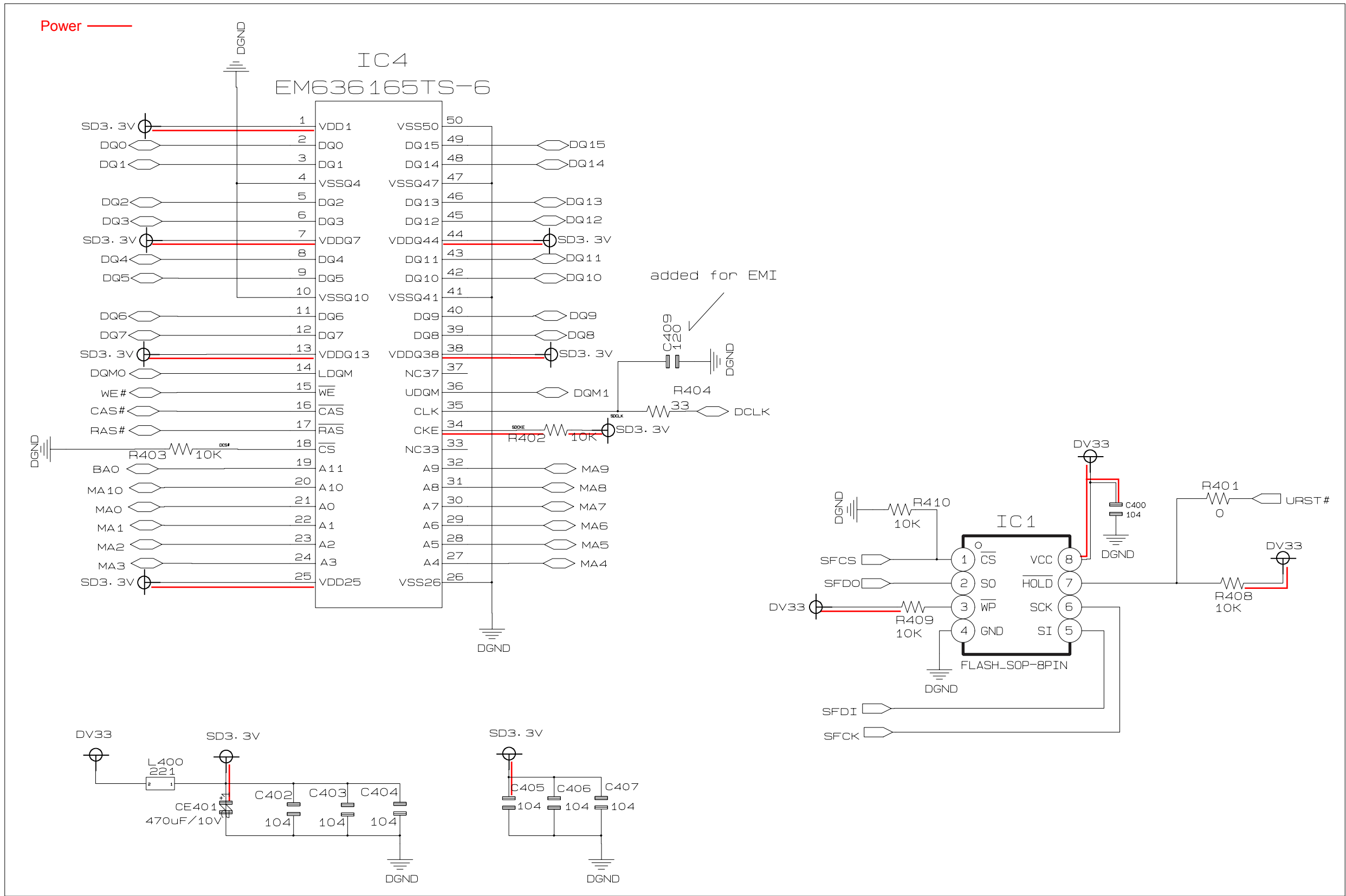


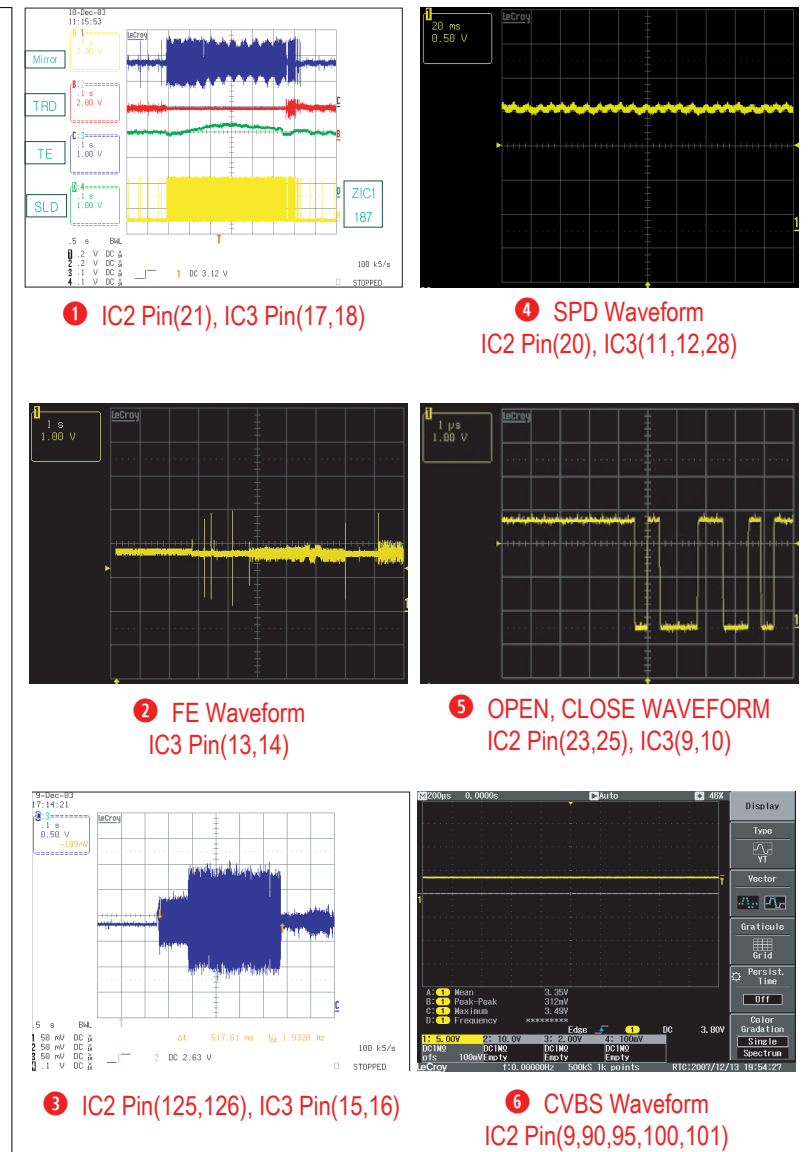
7-6 Audio (Main PCB)





# 7-7 Memory (Main PCB)



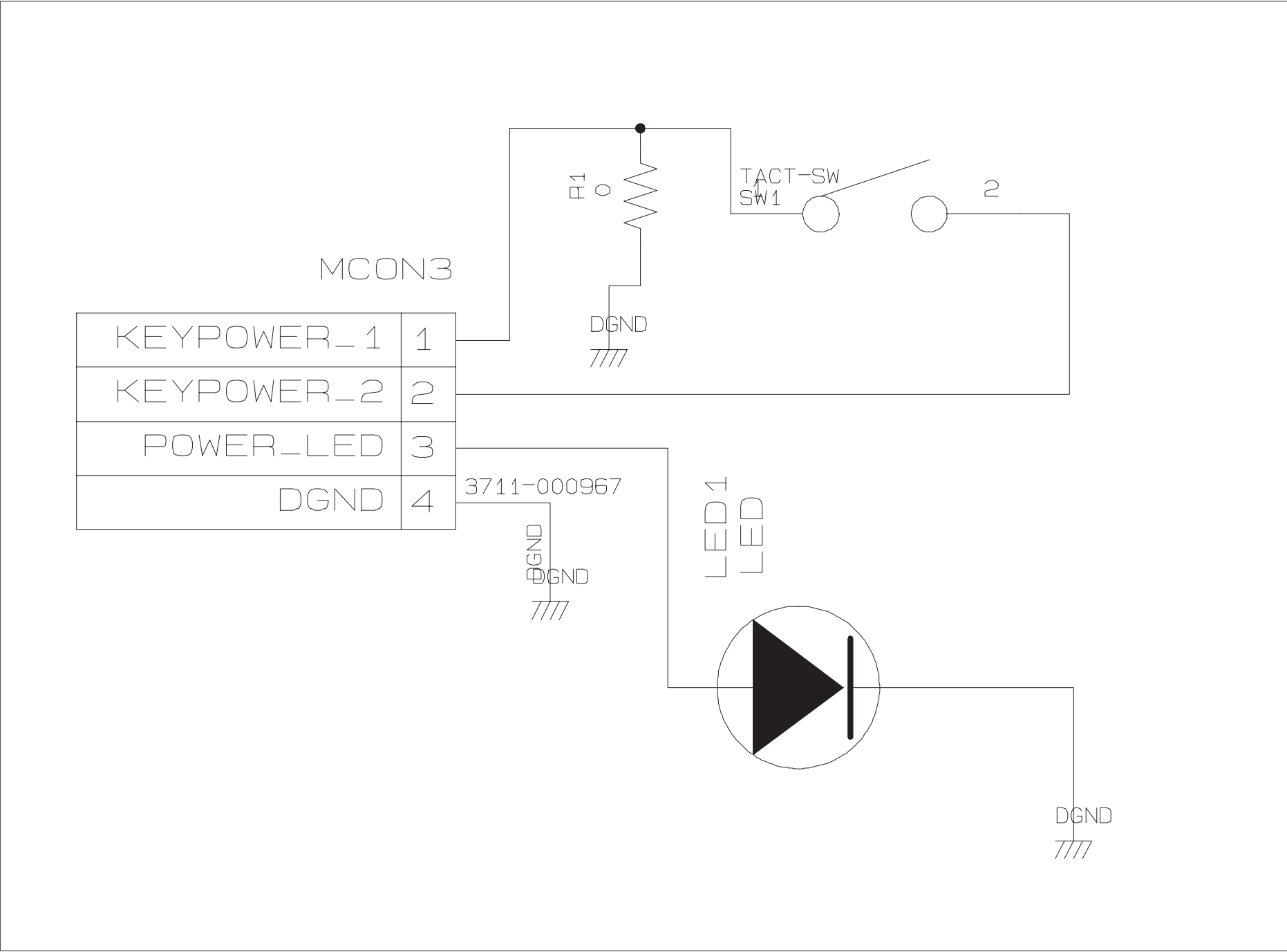


Samsung Electronics



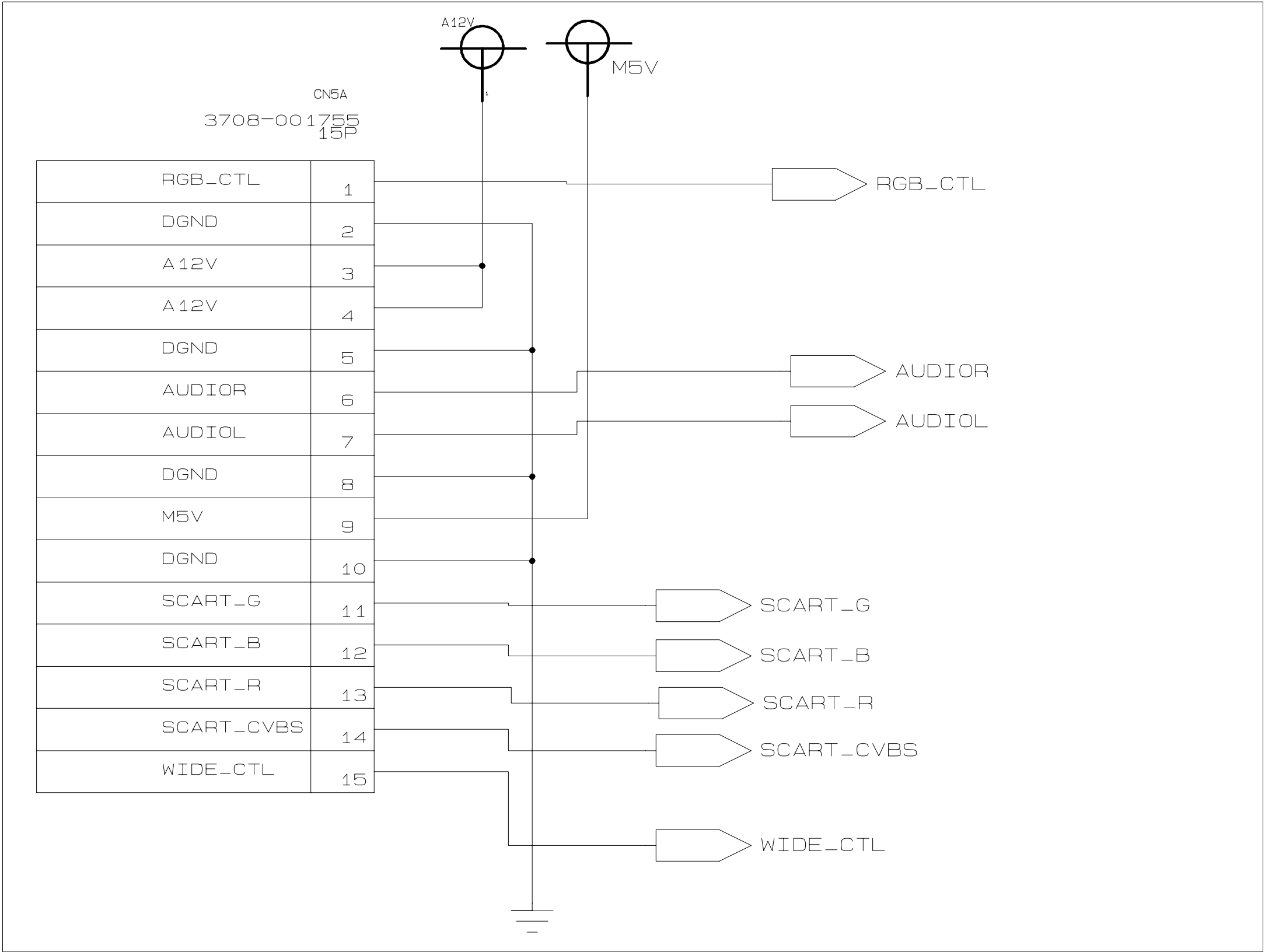


7-11 Power Key (Power Key PCB)





7-13 Scart Connector (Scart PCB)



7-14 Karaoke (Karaoke PCB)

