

AP15001D SERVICE GUIDE

1. POWER SUPPLY SYSTEM

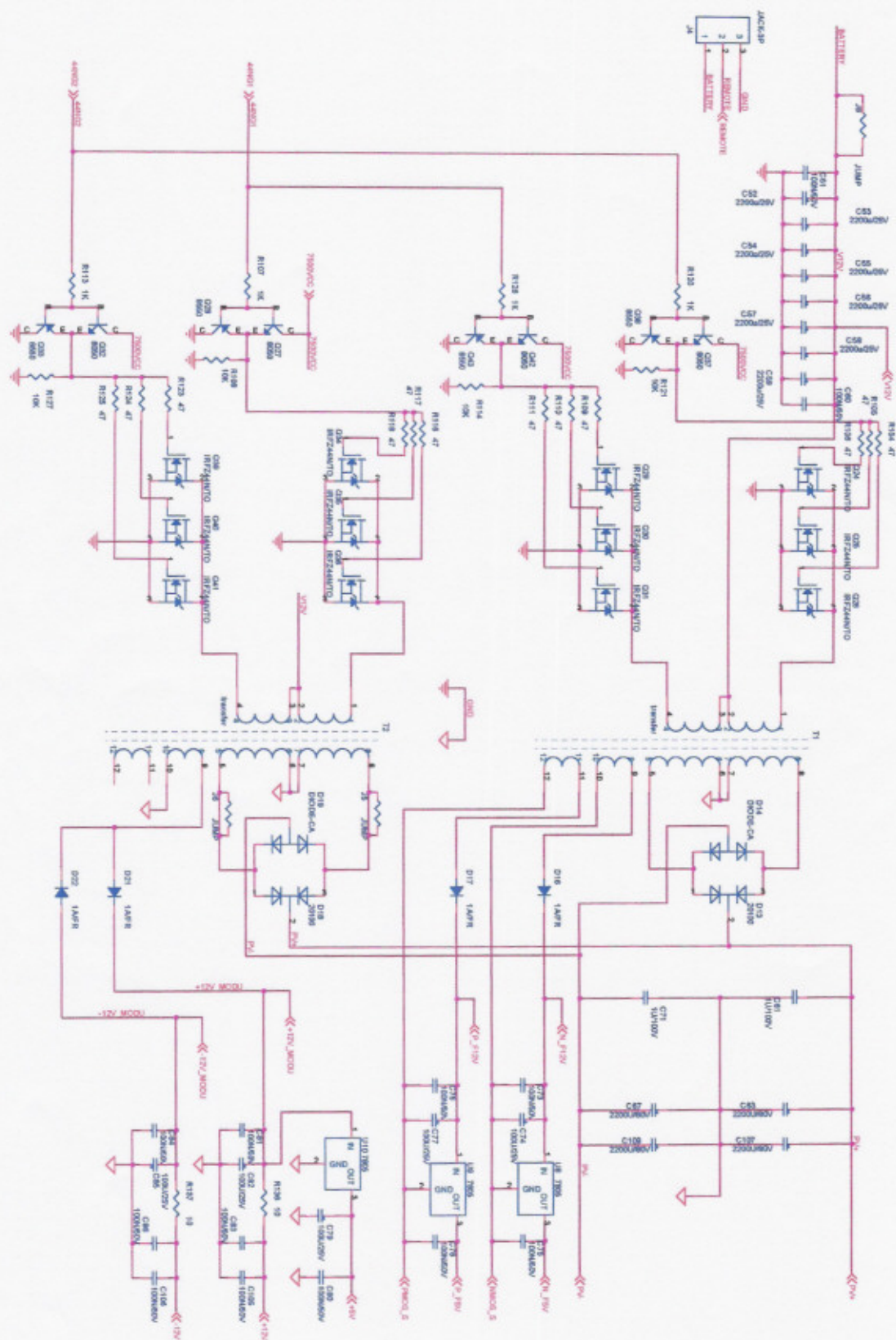
The power source of AP15001D is +12v in car. Inside the amplifier, the +12v power is converted to +-60V, +-12V and +5V. The +-60V is the main power of the last state power amplifier, +-12V is the power of preamplifier and +5V is the power of Modulator.

The power supply circuit is based on the DC-DC inverter. The main parts of the circuit are switching MOSFET, transformer, rectifier and control IC.

For most familiar problem, Following is the service method.

A. MOSFET defective.

When the power supply MOSFET was blew out, It may caused by overload or unstable of the +12V power supply. Following is the circuit of transformer and MOSFET driver.



Remove all the MOSFETs for T1 (Q24, Q25, Q26, Q29, Q30, Q31) or T2 (Q34, Q35, Q36, Q39, Q40, Q41) and test the voltage of first pad of these MOSFET (Gate), the correct DC voltage should be about half of the +12V power supply. If the voltage is right, then replace the blow up MOSFET. Else if the DC voltage on the first Pin (Gate) is not half of power supply, please check the 47ohm resistor in serial with the MOSFET gate (R104, R150, R106, R109, R110, R111, R116, R117, R118, R123, R124, R125) and the driving transistor (Q37, Q38 / Q42, Q43 / Q27, Q28 / Q32, Q33) first and then replace the blow resistor / transistor or MOSFET.

B. No reaction when power up.

The power supply circuits will power up when the remote is high. When the remote is high, the controlled +12V power inside the amplifier start work, following the remote power up circuit.

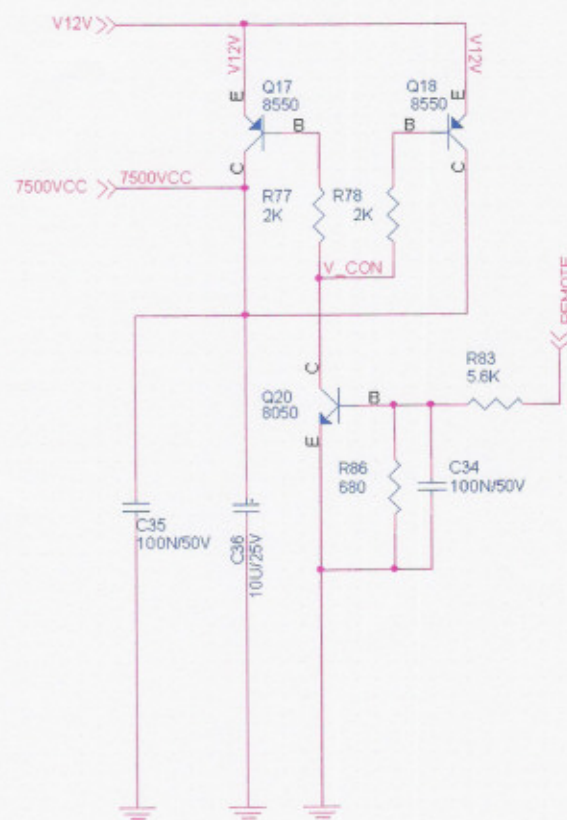


Fig.1 controlled +12V power supply circuit

When REMOTE network (connected to the remote terminal) become high, the collector of Q20 should be pulled to ground, then Q17 and Q18 is on, the 7500VCC network (controlled +12V power) become available. If 7500VCC network can't reach the power supply voltage when remote is high, check the three transistors and replace the defective transistor.

C. Other supply voltage.

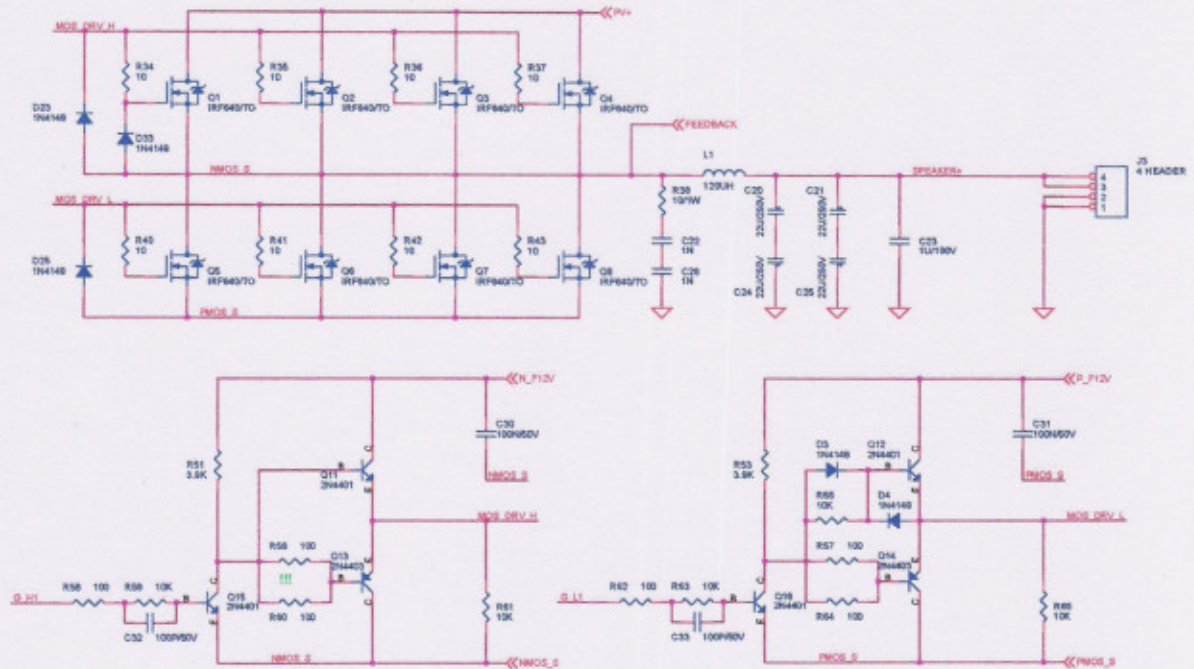
There's also +-12V and +5V power supply in the circuit. Please check the attached power supply diagram for the detail. The +12V and -12V power has a 10ohm resistor in serial to reduce noise, these two resistors are easy to blow with overload current.

2. PWM digital amplifier circuits

In AP15001D amplifier, the audio signal was modulated to a PWM signal, after a PWM digital amplifier, the high power PWM was filter by a LC filter and revert the original audio signal. Following diagram shows the circuits of the PWM digital amplifier circuits.

Q1~ Q8 are the main switching MOSFETs for the amplifier, Q11, Q13 is the driving transistor for Q1~Q4; Q12, Q14 is the driving transistor for Q5~Q8. For most familiar problems on this circuit, Q1~4 or/and Q5~Q8 was blew up. In the same time Q11~ Q14 and R35 ~ R37, R40 ~ R43 is also may be blew up. If the amplifier is in protect status without any load, mostly Q1~Q8 has one or more blow up. At the same time the driving transistors and resistors also may blow up. Check all the MOSFETs,

transistors and resistors will be very useful before replace the blow up components and power up again.



● Important Notice for re-assembling the amplifier:

There's a soft silicon heat path underlay under the PCB near the speaker output terminals, please make sure this underlay be installed properly before assemble the amplifier again. The amplifier may burn the PCB and components at high power without this silicon underlay.