CIRCUIT DESCRIPTION

Frequency configuration

The receiver utilizes double conversion. The first IF is 10.695MHz and the second IF is 455kHz. The first local oscillator signal is supplied from the RF module.
The RF module in the transmitter generates the necessary frequencies. Fig. 1 shows the frequencies.

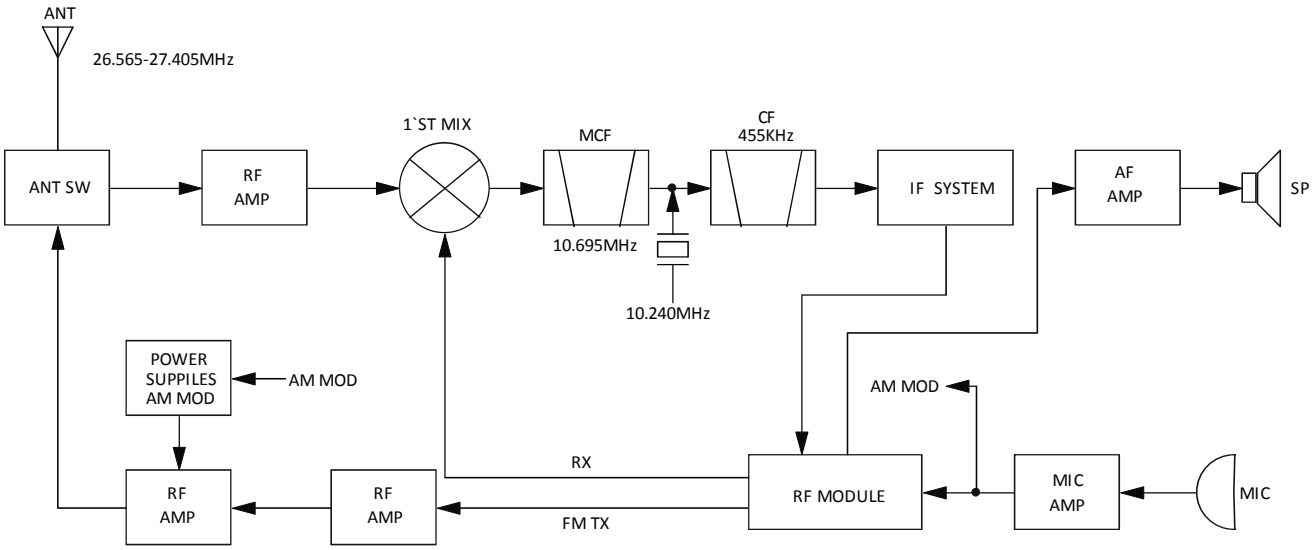


Fig. 1 Frequency configuration

Receiver

The frequency configuration of the receiver is shown in Fig. 2.

■ Front - end RF amplifier

An incoming signal from the antenna is applied to an RF amplifier (Q103) after passing through a transmit/receive switch circuit (D100, D1009, D110 and D108 are off). After the signal is filtered through a band pass filter (L103, L104 and L105) to eliminate unwanted signals before it is passed to the first mixer.

■ First Mixer

The signal from the RF amplifier is heterodyned with the first local oscillator signal from the RF module at the first mixer (Q104) to create a 10.695MHz first intermediate frequency (1st IF) signal. The first IF signal is filtered through a band pass filter (L106, L107 and L108) and then fed through the monolithic crystal filter (MCFs : CB100) to further remove spurious signals.

The band-pass filters are tuned to a desired frequency by varicaps (D112, D113, D114). A tuning voltage corresponding to the desired signal is applied to each varicap through the DC amplifier of the U106A to tune to the receive frequency.

■ IF amplifier

The first IF signal go into second mixer Q113, second mixer mix first IF and 10.24MHZ second IF output Y100. The signal is heterodyned again with a second local oscillator signal. The second IF signal is then fed through a 455kHz ceramic filter (CF100) to further eliminate unwanted signals. The signal is amplified by Q114 and Q105, and then the second IF signal enter U101 (FM processing IC) in FM mode or changed

CIRCUIT DESCRIPTION

according to Q134, Q135 and receive audio signal output.

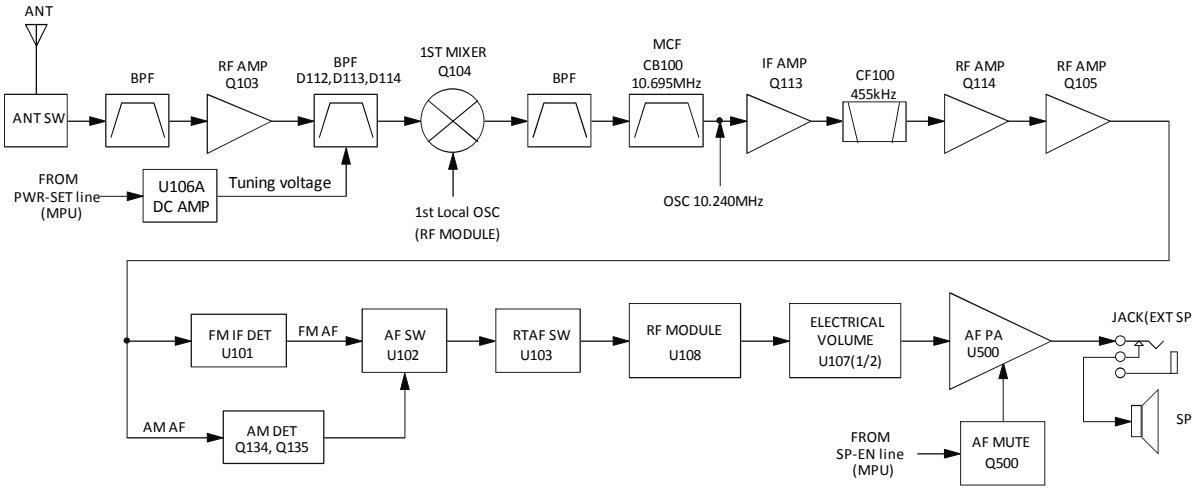


Fig. 2 Receiver section configuration

■ AF amplifier

The FM IC output the FM AF passes through the AF electrical switch(U102) or The AM demodulated signal from Q105 goes to AF electrical switch (U102) through Q134 and Q135, electrical switch (U103),RF module, and Electrical Control Volume IC(U107(1/2)). After goes to AF power amplifier IC (U500). Is routed to an audio power amplifier (U500) where it is amplified and output to the speaker. To output sounds from the speaker, U802 sends a high signal to the SPMUT line the turns Q500.

■ Squelch

A squelch circuit is provided to prevent no-signal noise or weak signals from outputting to a speaker during transmission.

Transmitter

■ Transmit audio

The audio signal from the microphone goes through the MIC amplifier (U801A), VOLUME CONT U107 (2/2) and resulting signal goes to the RF module through the RF modulation terminal for direct FM modulation. The AM modulation signal enter into RF amplifier after passing through power supplies Q124, Q127 and Q128.

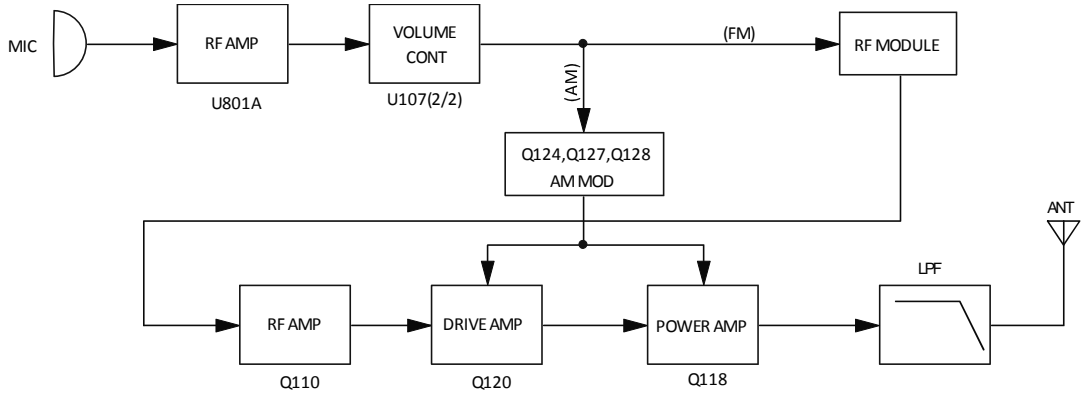


Fig. 5 Transmit circuit

CIRCUIT DESCRIPTION

■ **Power Amplifier Circuit**

The transmit output signal from the RF module passes through the amplified by Q110 and Q120. The amplified signal goes to the final amplifier (Q118) through a low-pass filter. The lowpass filter removes unwanted high-frequency harmonic components, and the resulting signal is transmitted through the antenna terminal.

Power Supply

The power supply voltage is maintained to 8.0V and 5.0V by the series regulator (U501 and U502). It is used as 8T and 8R.

8V is a common 8V.

8R is 8V for reception and output during reception.

8T is 8V for transmission and output during transmission.

5V is a common 5V.

Control Circuit

■ **MPU**

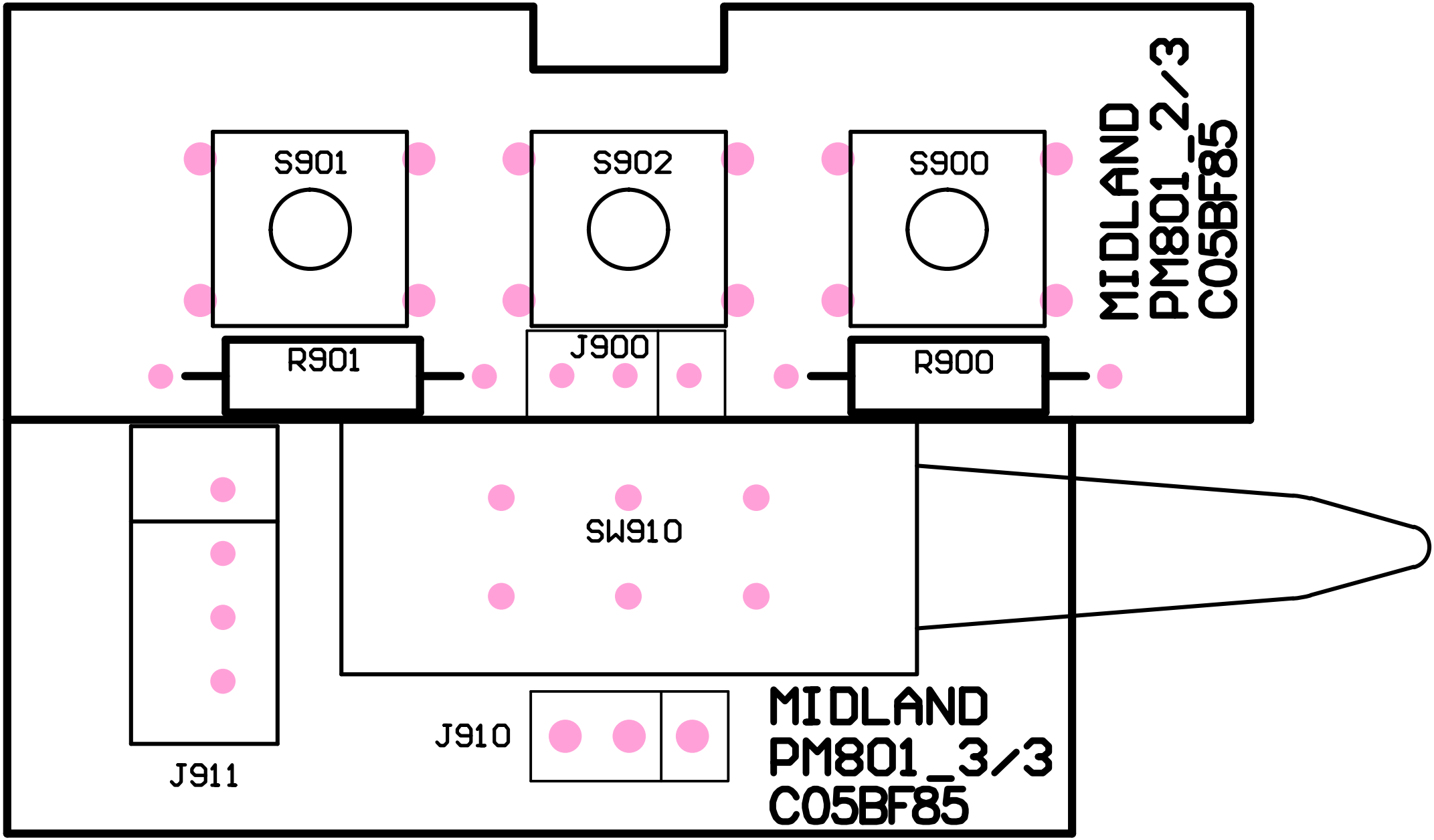
The control circuit consists of a microprocessor (U802) and its peripheral circuits. It controls the TX-RX unit. U802 mainly performs the following:

1) Switching between transmission and reception by the RF signal input.
2) Sending frequency program data to the RF module.
3) Controlling squelch on/off by the DC voltage from the squelch circuit.
4) Controls the second MPU.
5) Controls the compander unit.
6) Controls the power supply unit.

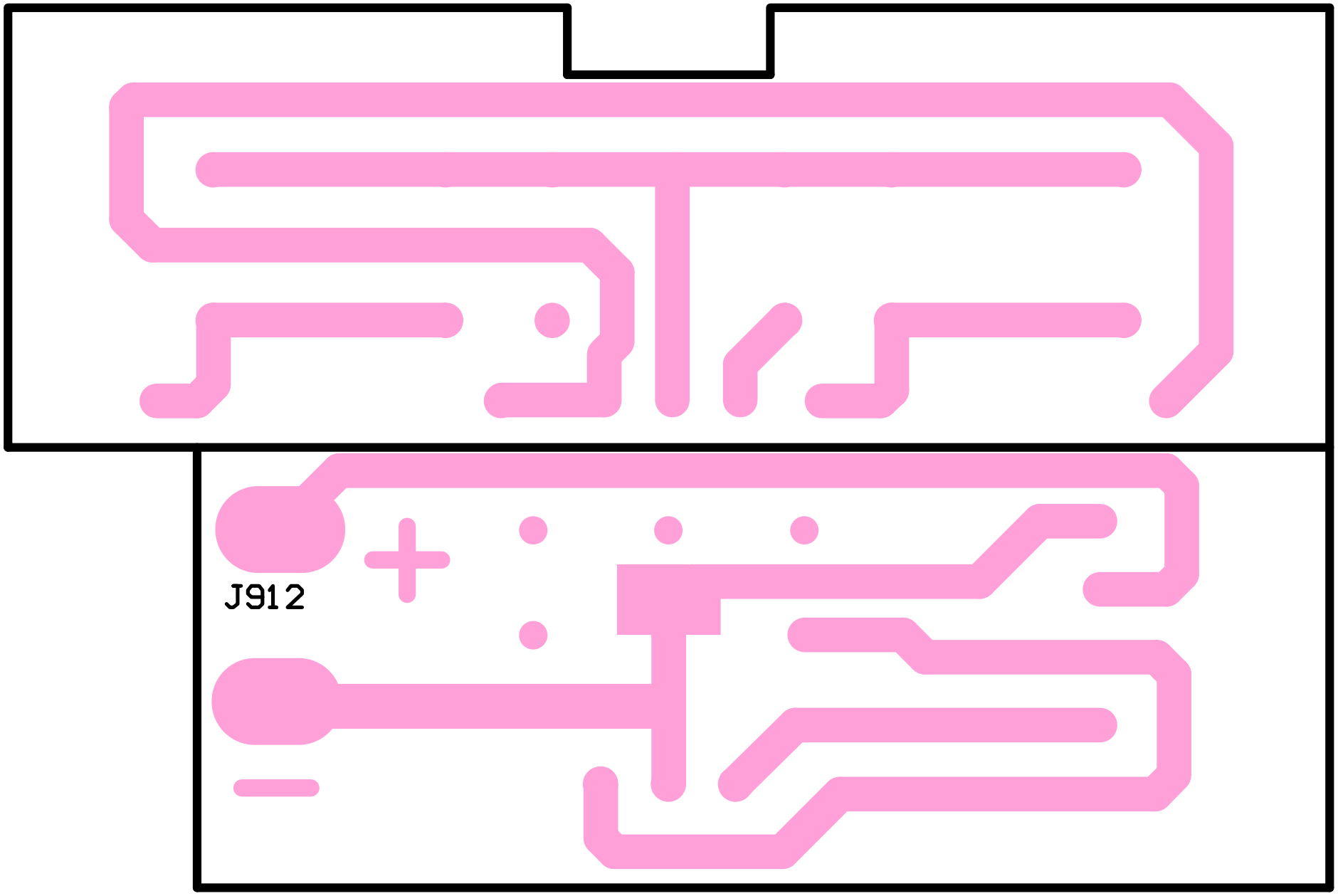
Display Circuit

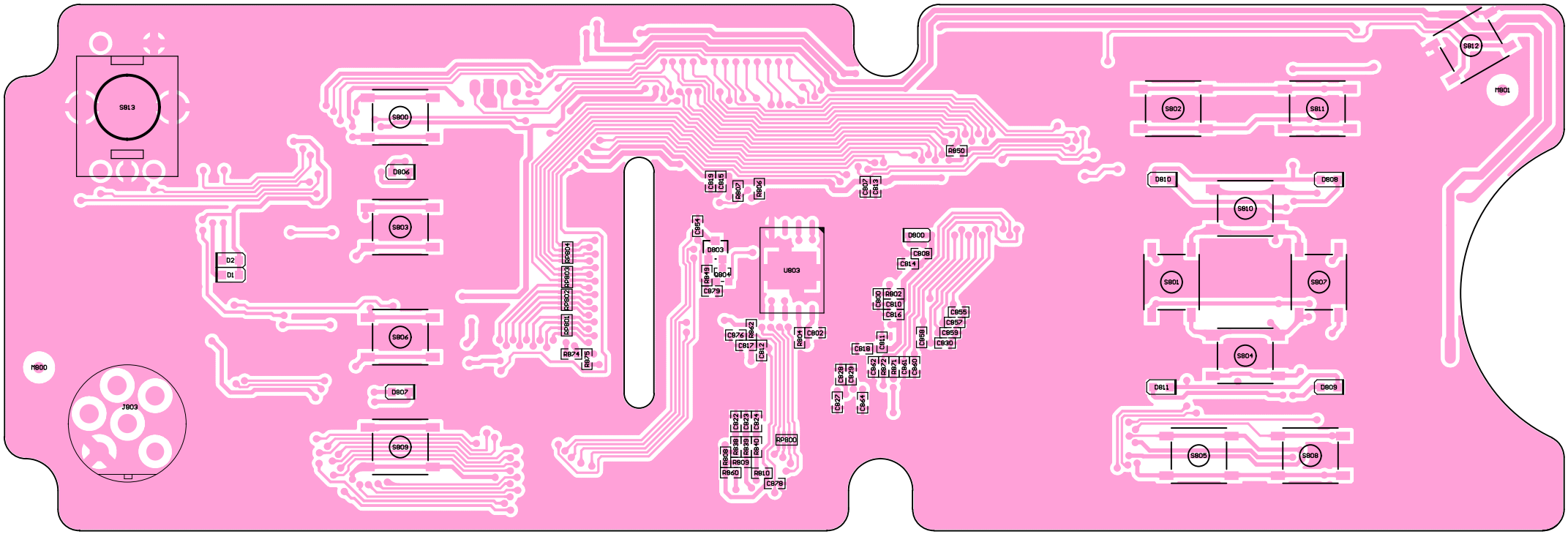
The MPU (U802) controls the display LCD(J800) and LEDs.

PC board views



PC board views

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S803
D2
D1
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C822
C823
C824
RP800
R838
R839
R840
R808
R809
R840
R810
C878
C854
D803
R849
Q804
C879
R807
R806
C845
C846
R850
C807
C813
U803
C802
R804
C842
C811
C818
C828
C829
C827
C844
C843
C845
C827
C844
D800
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C830
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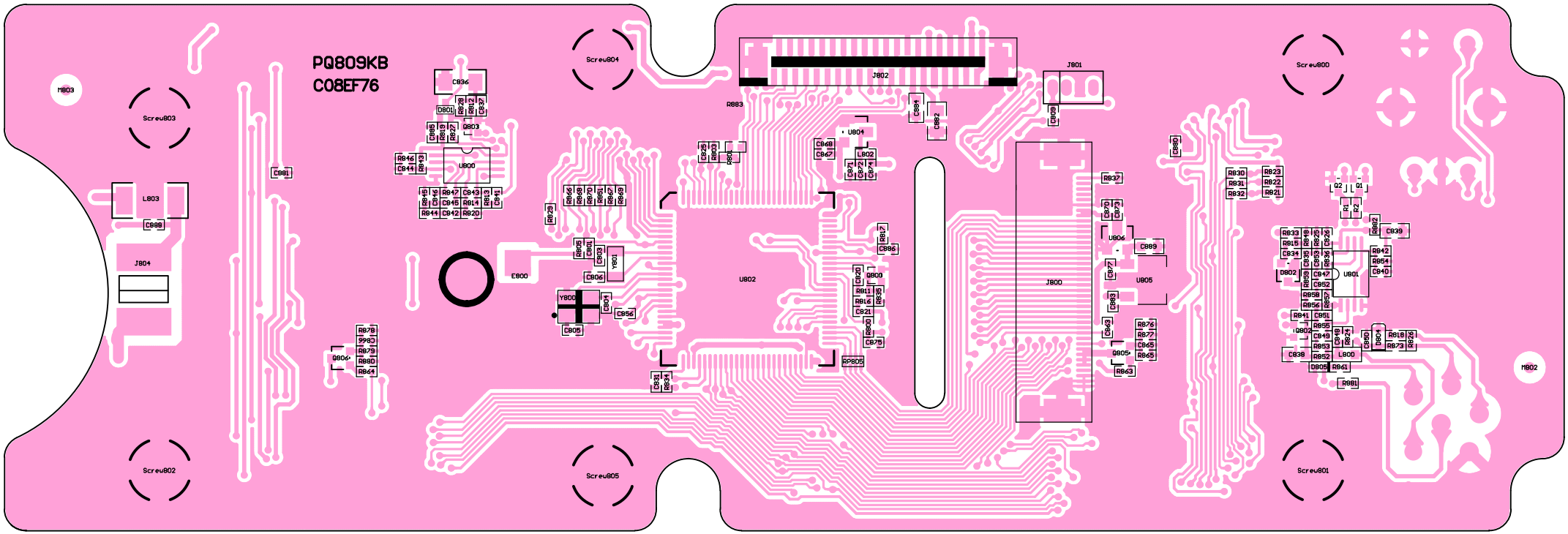
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Screw804
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Screw802
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Screw801
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C836
D801
R828
R812
C837
C985
R815
R827
Q803
U800
R846
C844
R843
R845
C846
C847
C845
R814
C843
R813
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R876
R877
C865
R865
Q805
R863
C880
R830
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R832
R823
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Q1
R1
R2
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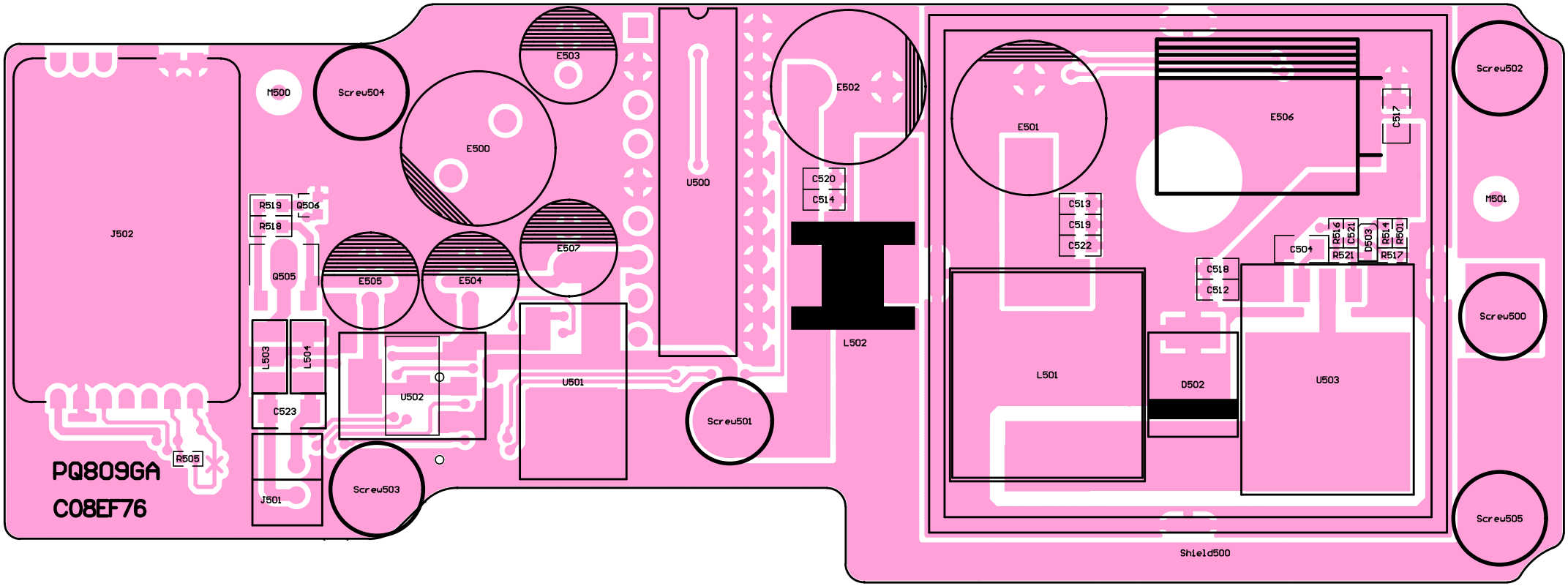
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C517
Screw502
M501
R519
Q506
R518
Q505
E505
E504
E507
C513
C519
C522
C504
R516
C521
D503
R514
R501
R521
R517
C518
C512
Screw500
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J501
Screw503
Screw501
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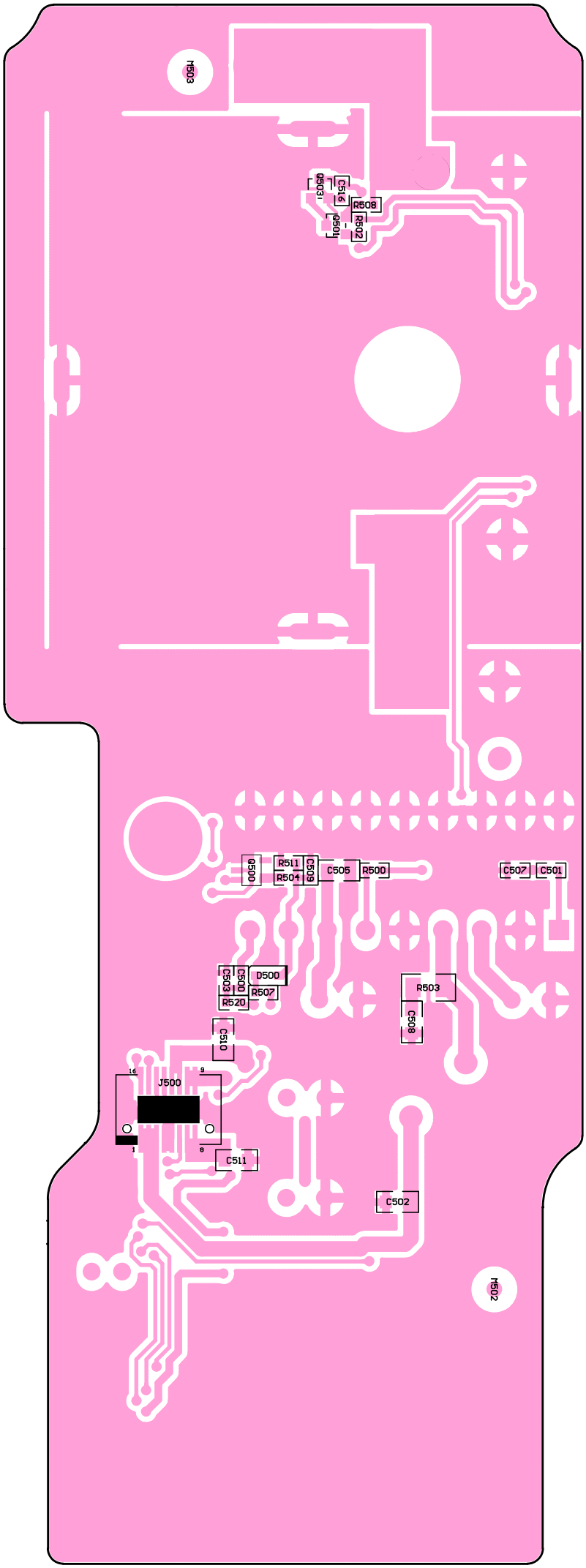
Shield500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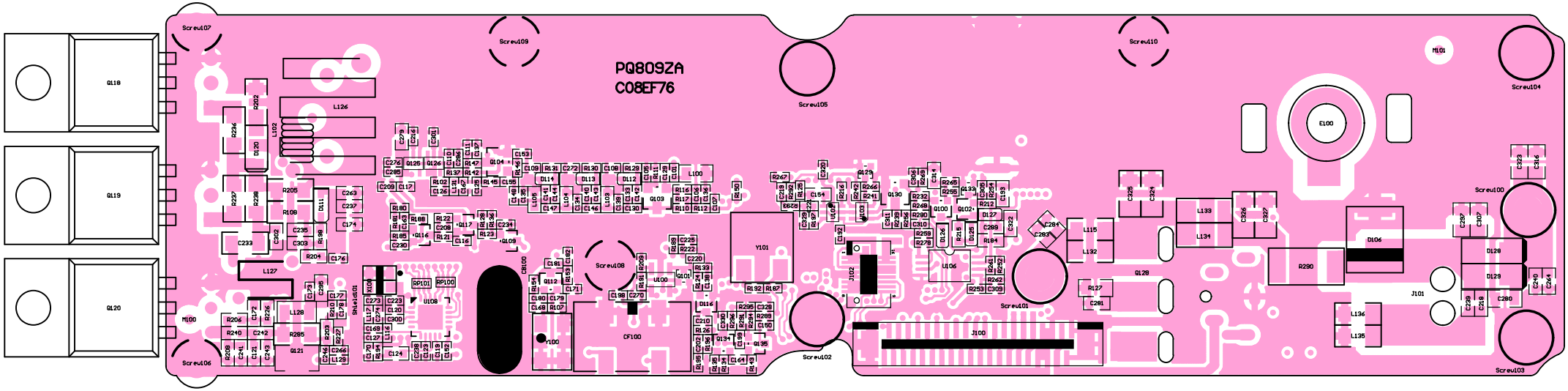
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M100
M101
Q118
Q119
Q120
L126
L102
L100
L127
L128
L129
L132
L133
L134
L135
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Y101
Y100
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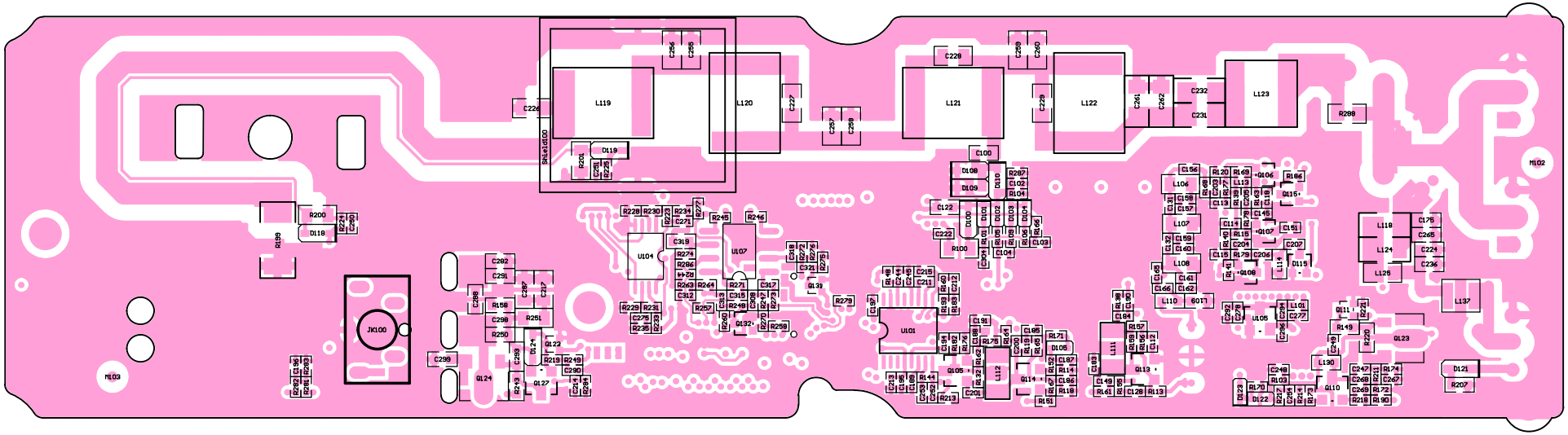

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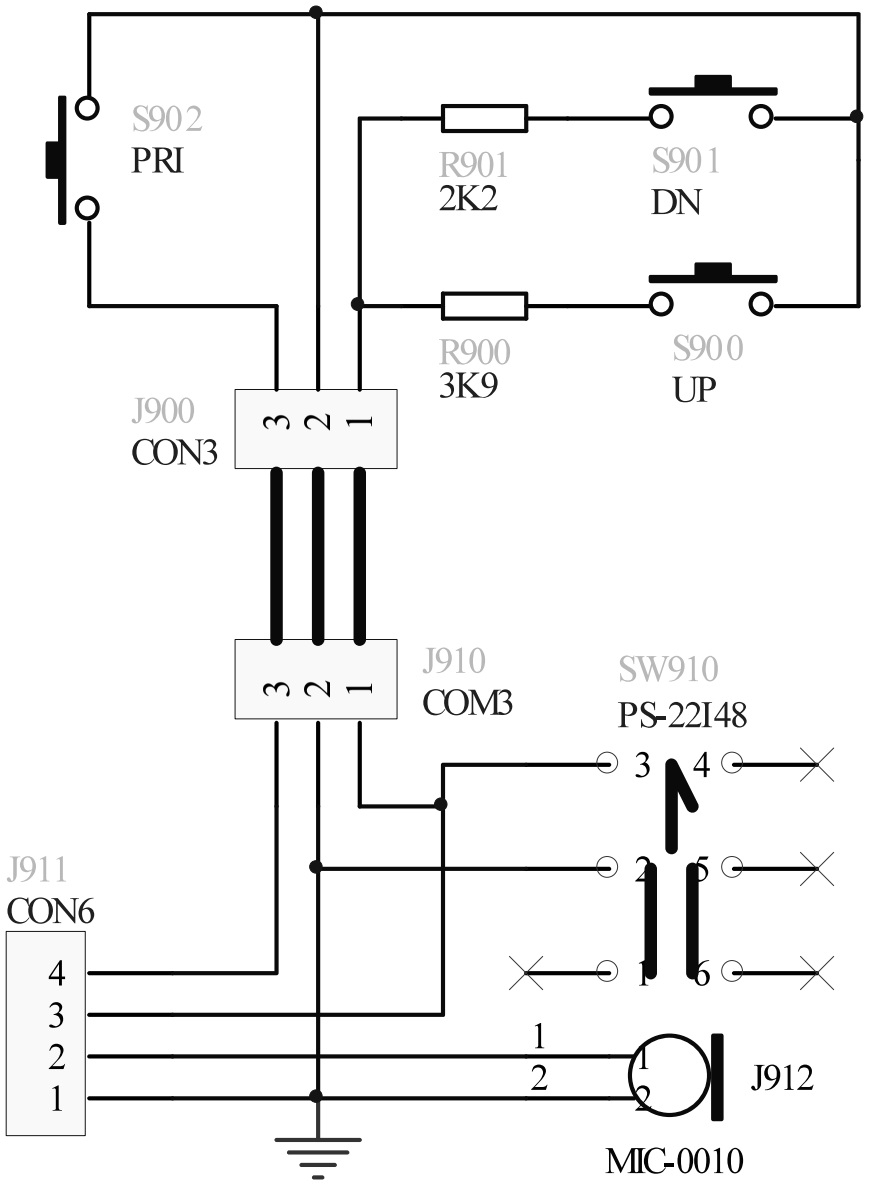

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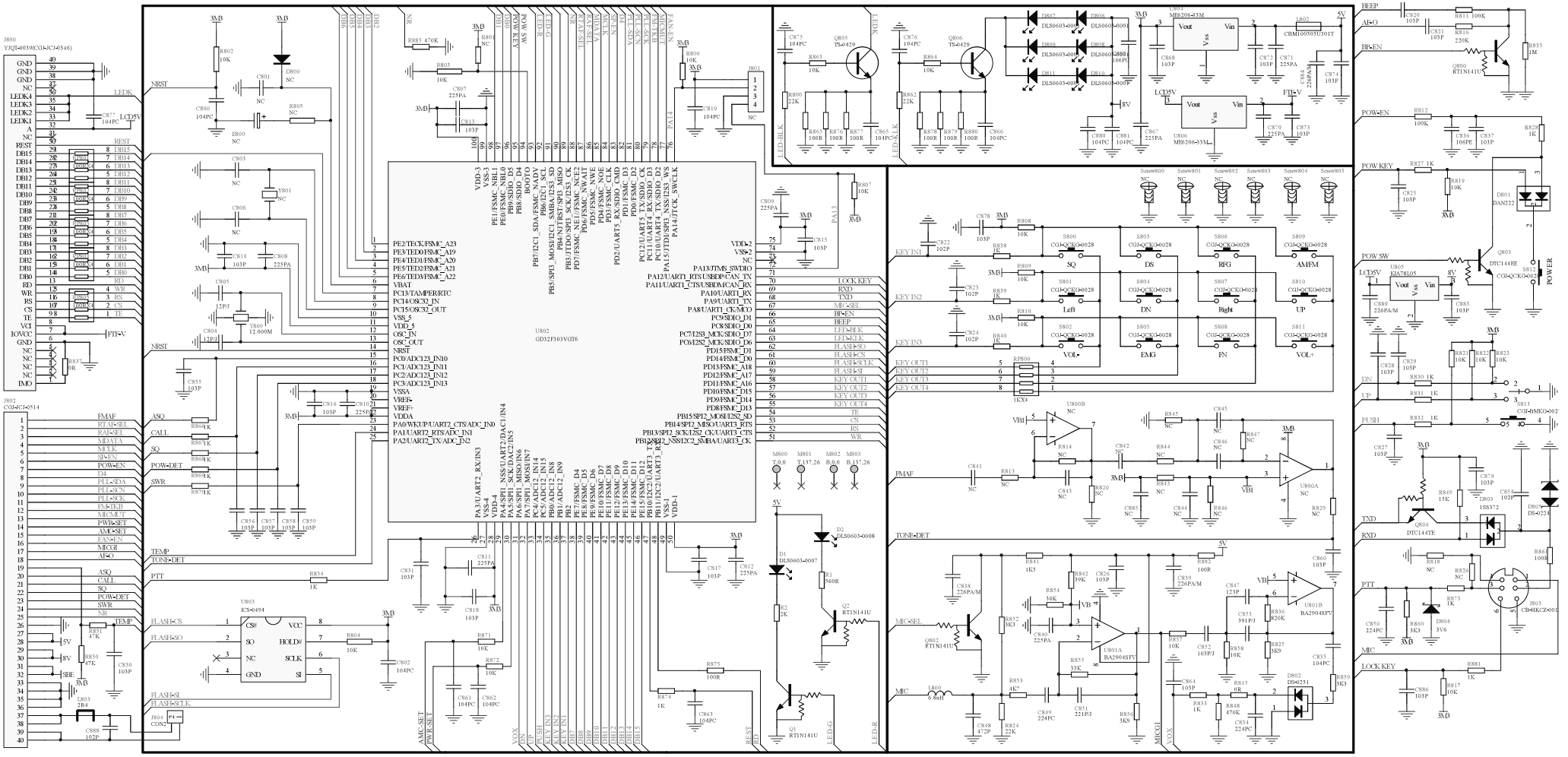

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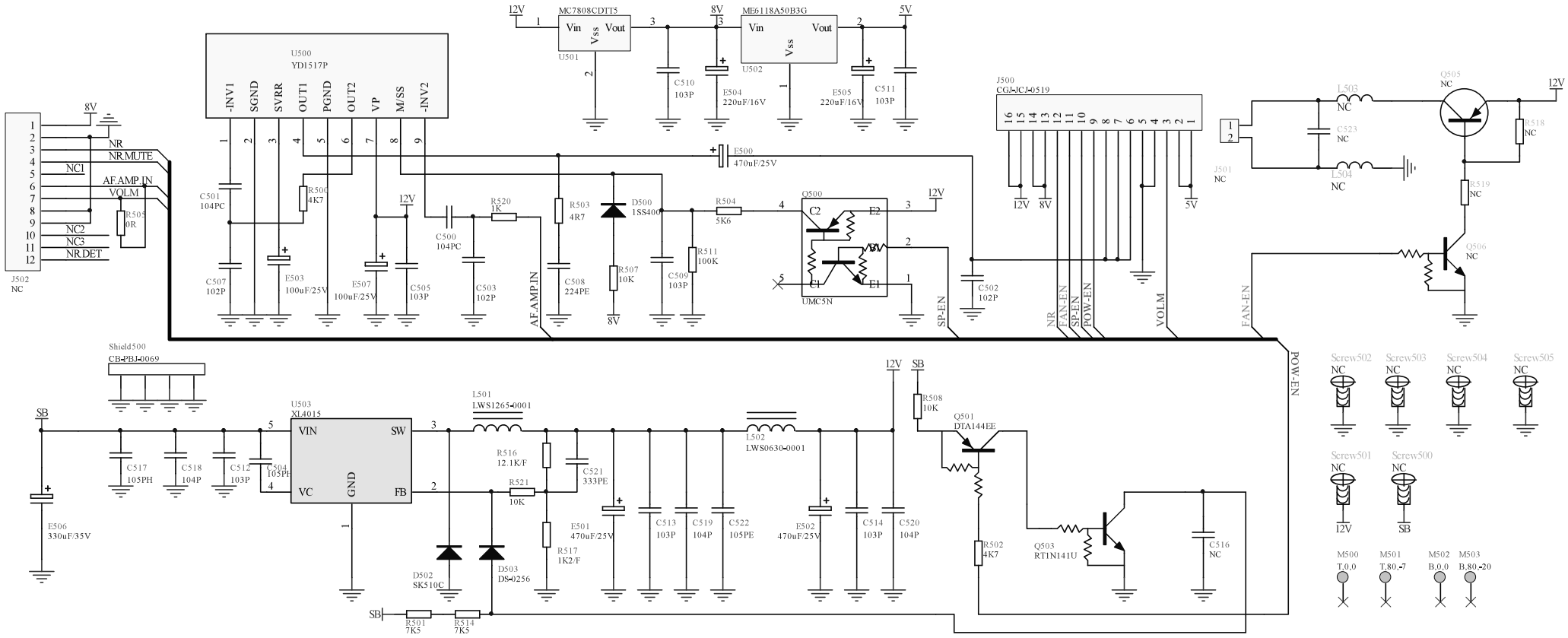

SCHEMATIC DIAGRAM