

Using a Dallas/Maxim DS1811 in the Reset Section.

There is also another way to fix the reset section. This involves using the new Dallas/Maxim Semiconductor DS1811 reset chip (TO-92 package). This single reset chip should replace a whole bunch of the stock reset components on a Bally MPU (thanks to Neil for doing the leg work on what can be removed). This inexpensive Dallas device looks like a transistor, but is really a three leg chip in a TO-92 transistor

The DS1811 is installed with pin 1 going to /RESET (Q5's leg closest to resistor R11), pin 2 to +5 volts, and pin 3 to ground. If the MPU board boots fine by shorting pins 39 and 40 of the U9 CPU, installing this part may be the "quick fix" to your reset problems. Also the benefit of removing many of the stock reset components on boards with battery corrosion certainly helps.

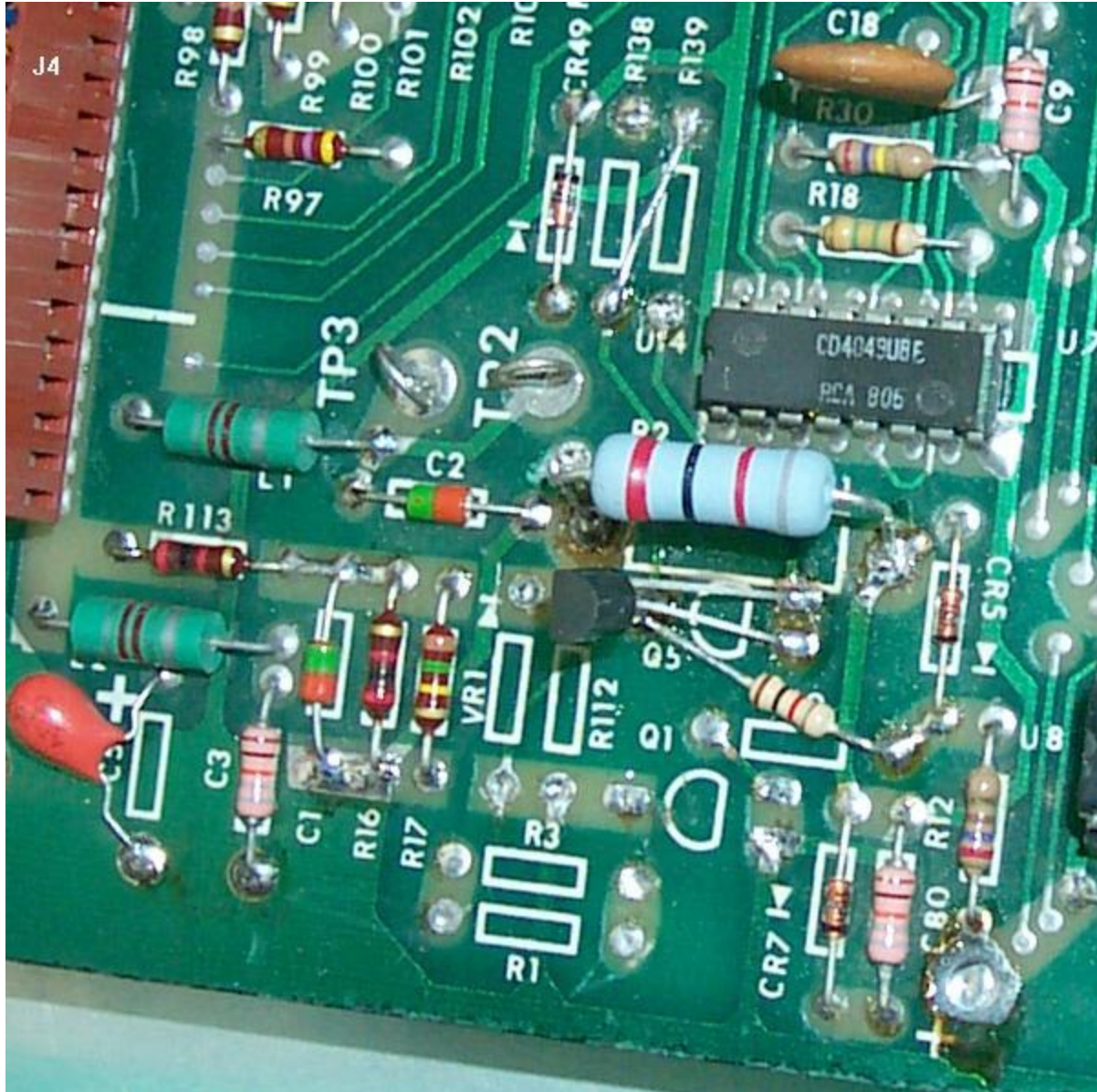
There is a side effect of the changed reset circuit: Since the Dallas DS1811 increases the reset timing (the time pin 40 of the CPU is held low) from about 50ms to 150ms, the initial "flicker" may not longer be a "flicker". The LED will stay on longer (because the reset is longer), making the "flicker" more of a "flash".

Installing the Dallas DS1811.

Here are the steps to replace the Bally reset section with a single Dallas DS1811 reset chip.

- Replace R11 with a *new* 2 watt, 82 ohm resistor.
- Remove Q1, Q5, R140, R138, R139, VR1, R112, R1, R2, R3.
- Put a jumper from the lower hole of R138 to the upper hole of R139 (note "lower" and "upper" being relative to the MPU board in its normally installed position in the game).
- Connect the reset pin of the DS1811 (bottom pin, as the flat side of the DS1811 is towards connector J4) to the collector hole of Q5 (the single left most hole of Q5 closest to connector J4). Wait to solder this connection until the next step.
- Add a 1k ohm pull-up resistor from +5 volts to the DS1811 reset pin (which is connected to the left most hole of Q5). In the picture below, the banded side of CR5 was used to access +5 volts.
- connect the VCC pin of the DS1811 (the middle pin) to +5 volts, which is the bottom right pin of Q5.
- Connect the GND pin of the DS1811 (the top pin) to ground, which is the top right pin of Q5.
- Leave CR5, CR7 installed.

Replacing the reset section with a Dallas DS1811 reset chip. Picture by Neil.



Note the 1k pull-up resistor is needed for additional current draw for all devices needing reset. If not installed, the MPU board can be intermittent on powerup because the DS1811 can't source enough current to bring the reset signal high by itself.

As Neil explains, replacing resistor R11 is a good idea. These carbon resistors eventually heat up and break down, and once you replace the rectifier circuit with better diodes, the leakage is smaller and that results in around 14 volts on the 11.9 volt line. This is enough to push the stock resistor out of spec. It will heat up and change resistance, and in some cases will go open, which causes a reset. As long as R11 is a 2 watt resistor, it should be fine. If the current resistor is discolored or of a carbon type, it should be replaced.