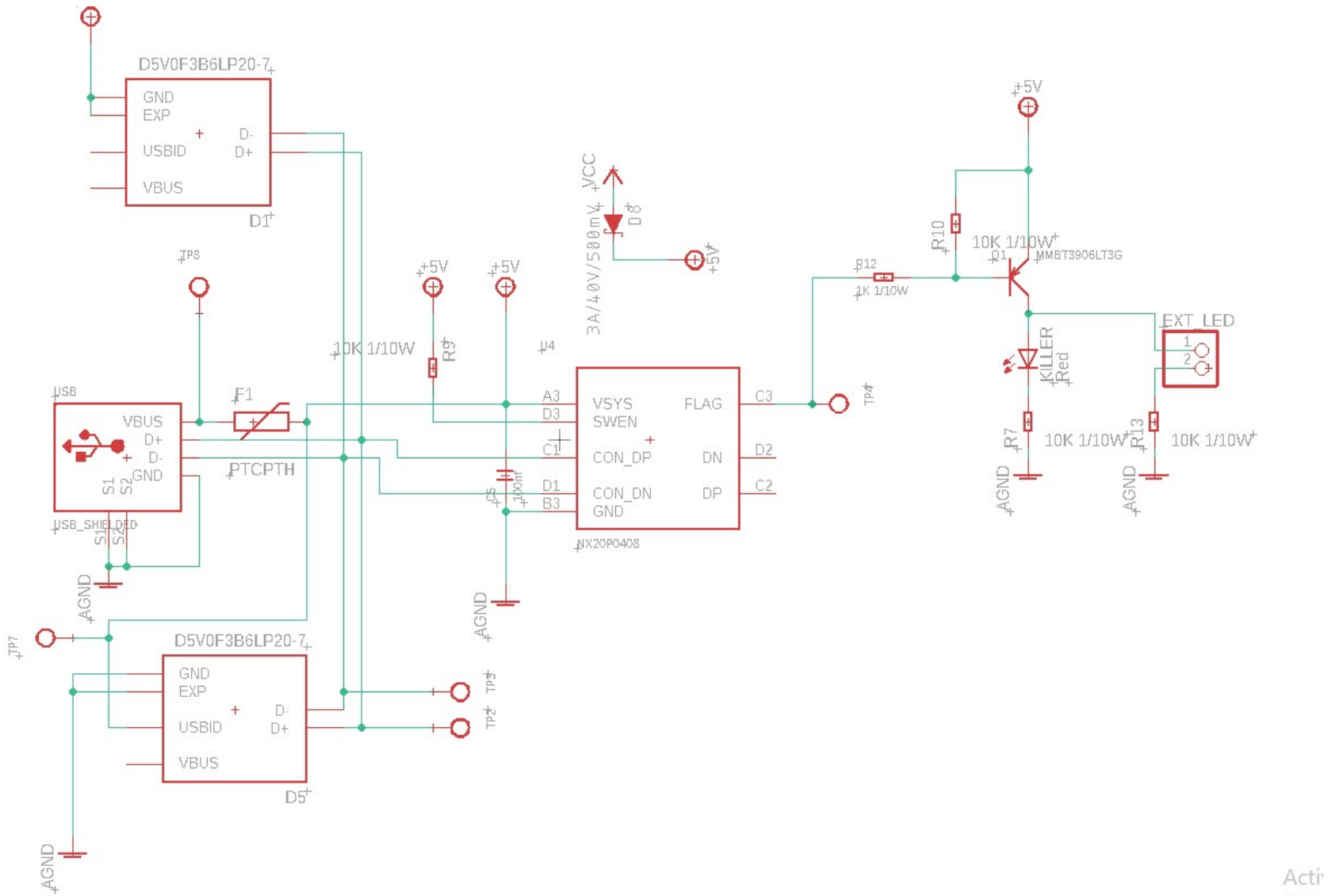
D5V0F3B6LP20-7
GND
EXP
USBID
VBUS
D-
D+
D1
TP8
+5V
10K 1/10W
R9
U4
VCC
3A/40V/500mV
D8
+5V
R10
10K 1/10W
Q1
MMBT3906LT3G
R12
1K 1/10W
EXT_LED
KILLER
Red
R7
10K 1/10W
R13
10K 1/10W
AGND
USB
VBUS
D+
D-
GND
S1
S2
F1
PTCPTH
USB_SHIELDED
A3
D3
C1
D1
B3
VSYS
SWEN
CON_DP
CON_DN
GND
FLAG
DN
DP
C3
D2
C2
C5
100nF
NX20P0408
TP4
TP7
TP3
TP2
D5

Debugging

Components D1 and D5 should not be hot. However, they can be hot when it suppresses a power surge but, without power surge, they should not get hot.

This device has internal diodes only. Please note that one pin is left un connected (VBUS pin).

If users incorrectly solder these components (D1 and D5) and that particular unwanted pin is connected to power rail mistakenly, then diodes should get hot.

Other reason for the abnormal heat is due to soldering.

If user inserted a USB Killer to device and components D1 and D5 got hot, then may be these components are already dead by now.

If this is the case, please remove components and continue lecture.

Next step is checking voltage of the main surge detector IC (NX20P0408).

User should check any GND pin of the circuit with D8 diode's pin (USB side pin).

This should be nearly 5V.

If it is not nearly 5V, user has to check boost converter output voltage.

It is TP12 and GND (not in above schematic).

Then user needs some small voltage (limited current) source which can feed into USB Bus (bench power supply may work if user adjusts the current limiter around 300mA-500mA).

Slowly user needs to increase the voltage up to around 28V at USB Data pins and check whether the main detector is triggered or not.

To see if main detector is triggered, please check TP4 and +5V line with your voltmeter. If a power surge is detected, then voltmeter should show a value of around +5V. If this happens, user can conclude that the main detector IC is working.

If there are not around +5V in your voltmeter while checking TP4 and +5V line, then main surge detector IC (NX20P0408) is not working as it should.

The above can be due to several reasons:

- IC (NX20P0408) was not soldered correctly.
- Components in wrong positions.
- Components soldered incorrectly.
- Not all components are on board.

At this point, it is recommended try to fix any of the above issues or start from zero.

However, if there were +5V in the voltmeter while checking TP4 and +5V, then also check the resistance of F1. It should be very low.

F1 acts as a conductor for normal operation.