

PRODUCTION INSTRUCTIONS

MAIN CONTROLLER PCBA

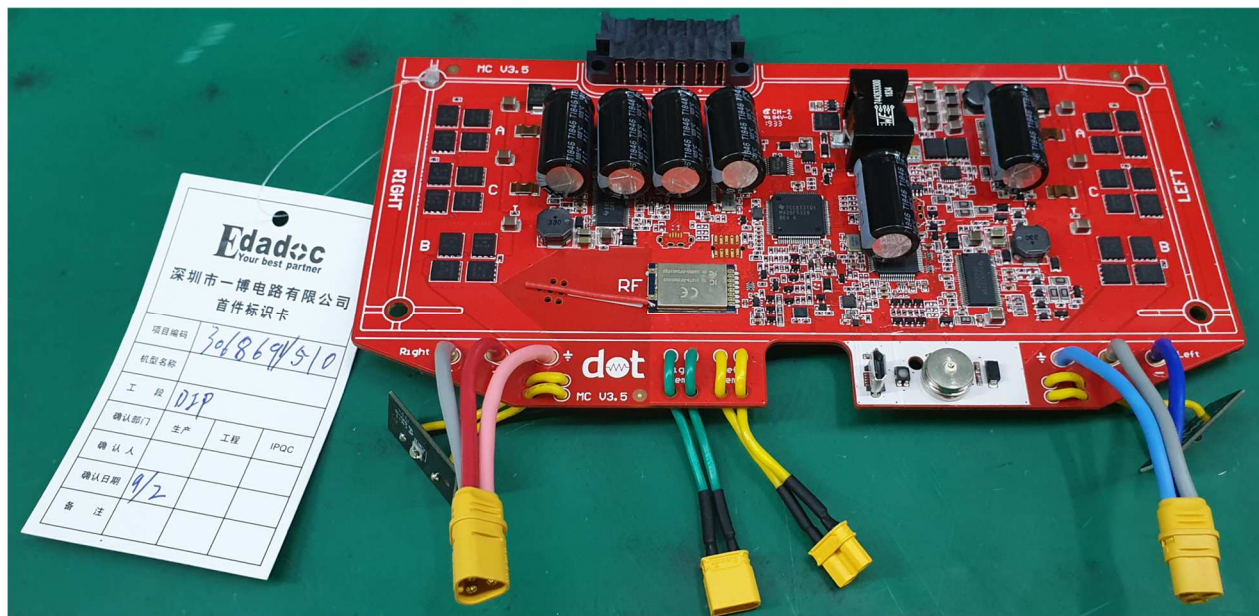
Date: 10-7-2020
Revision: 1.0
Author: Tony Little
Product: Electric Skateboard
Company: Globe Brand

1	CONTENTS	
2	Production Requirement.....	2
3	Production BOM Changes	3
4	Production PCB Changes	4
4.1	Recommended change – Wire holes.....	4
5	Production Feedback	5
5.1	CN12, USB connector solder.....	5
5.2	Capacitors	6
5.3	Inductor L3.....	6
5.4	IC2, TPS40170RGY	7
5.5	CN7, Magnetic Connector	9
6	Component Quality Issues	10
7	Summary	10

2 PRODUCTION REQUIREMENT

V3.5

Heatsinks not fitted.



Heatsink supplied separate.



3 PRODUCTION BOM CHANGES

Use existing BOM V3.5 with 2 changes below. This will then be BOM V3.51

Change R26 - (previously 47kohm)

43.5k Ohm $\pm 1\%$ 0.063W, 1/16W Chip Resistor 0402 (1005 Metric)

Yageo RC0402FR-0745K3L

Change R50 – (previously 0.01ohm)

5mOhms $\pm 2\%$ 0.75W, 3/4W Chip Resistor 1206 (3216 Metric)

Susumu KRL1632E-M-R005-G-T5

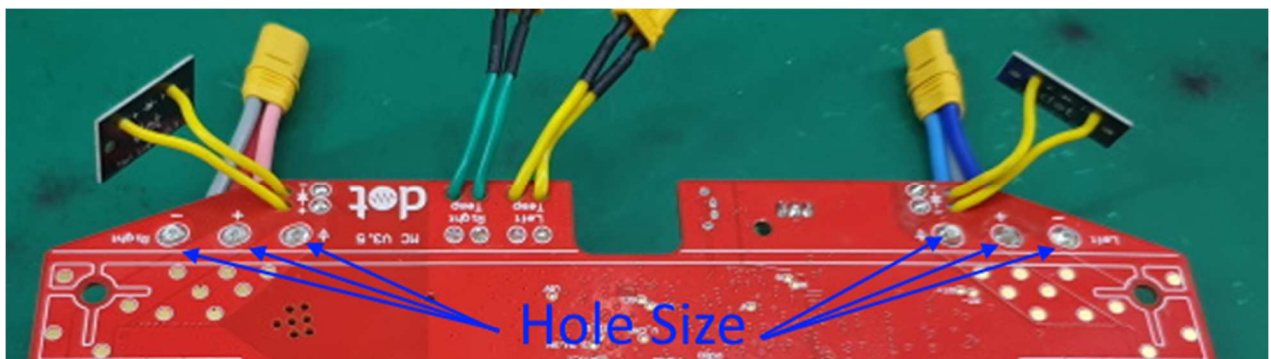
4 PRODUCTION PCB CHANGES

V3.5 with drill hole size change.

4.1 RECOMMENDED CHANGE – WIRE HOLES

Comport wiring was not previously to the correct tinned specification. Tinned wiring did not fit in the 1.9mm holes. Production required wires to be trimmed.

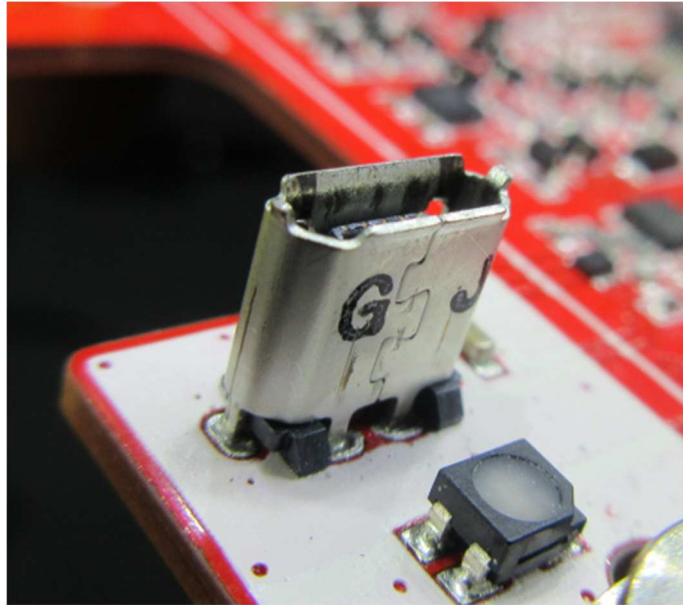
It would be recommended to revise the drill file for PCB manufacturing to increase these 6 plated through holes to 2.2mm. This will reduce the chance of tinned wire re-work and improve solderability for correct specification multi-strand wiring.



5 PRODUCTION FEEDBACK

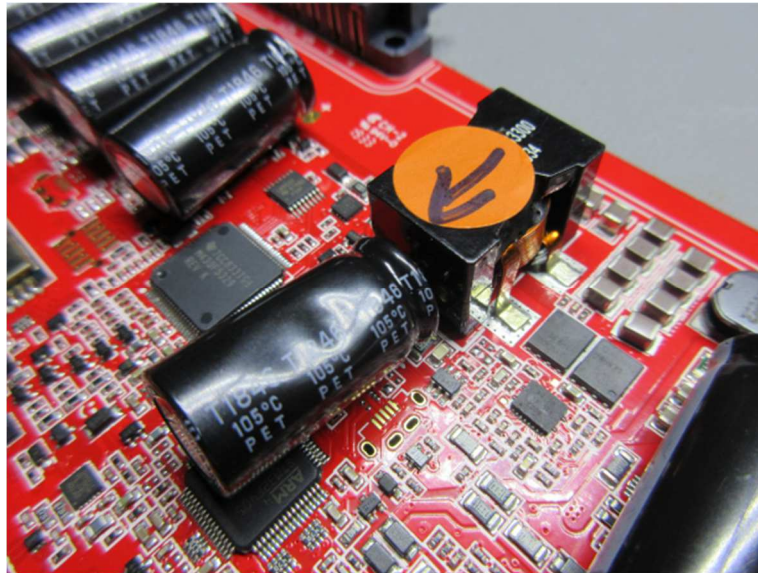
5.1 CN12, USB CONNECTOR SOLDER

The solder fill for the USB chassis through hole mounting is insufficient. USB connector retention is less than required.



5.2 CAPACITORS

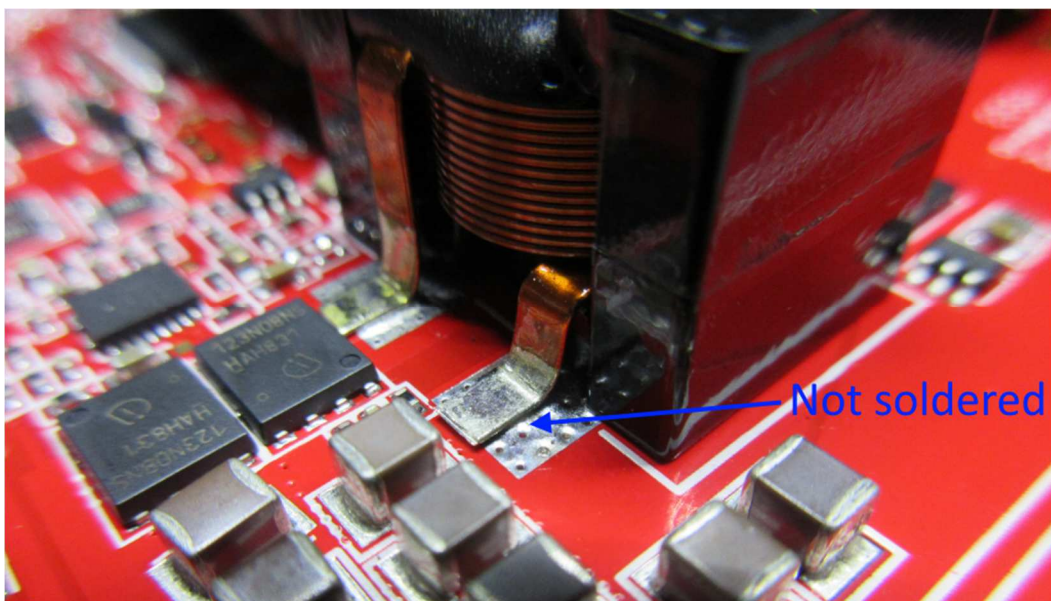
Ensure capacitor damaged is avoided.



5.3 INDUCTOR L3

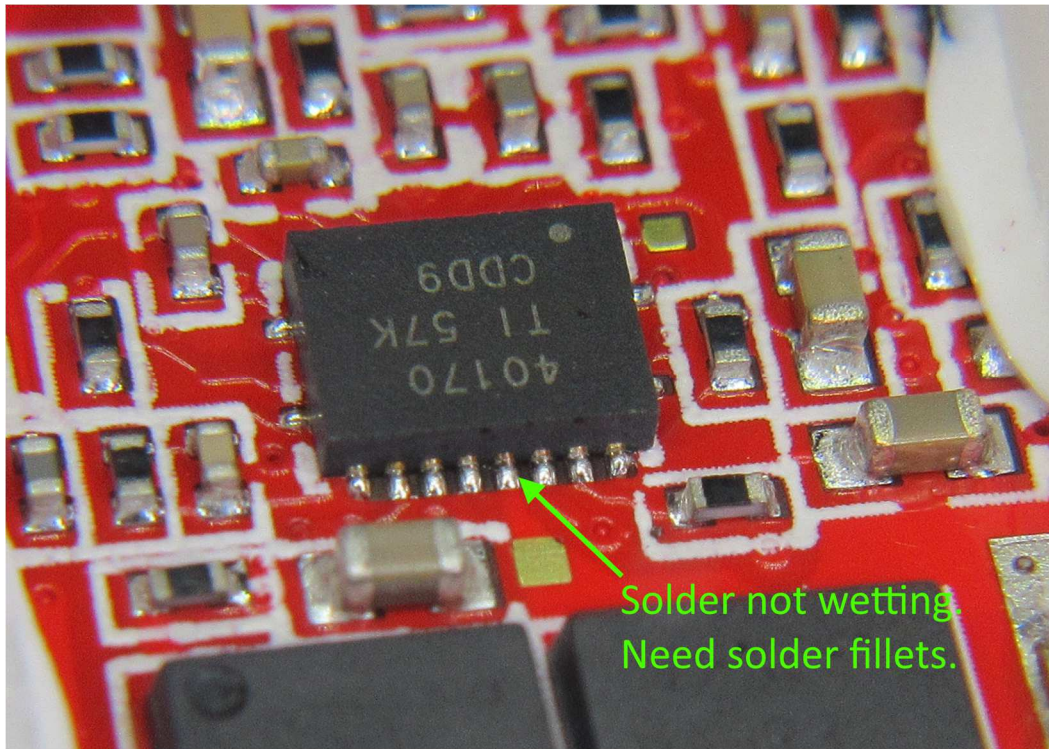
Large surface mount inductor requires visual inspection to ensure terminals are soldered.

Example below show terminal left unsoldered.

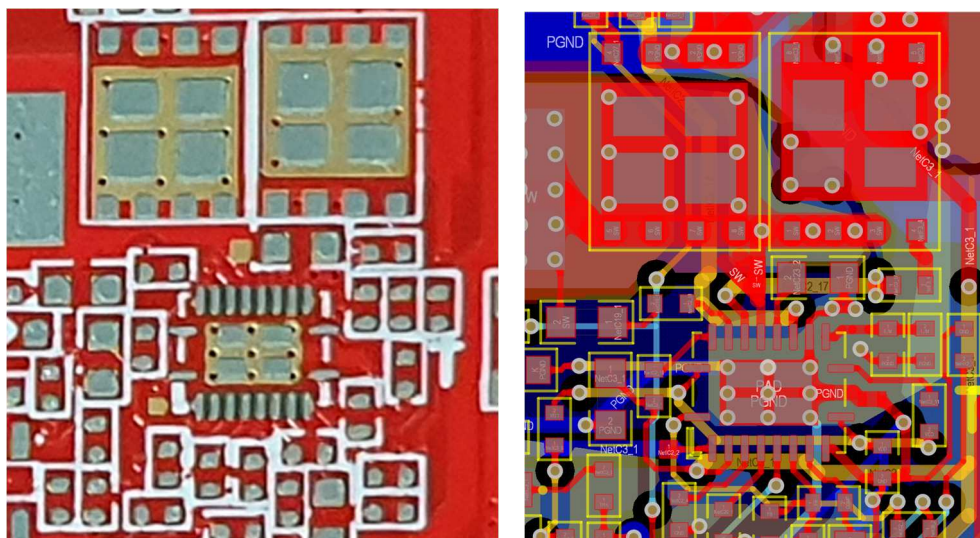


5.4 IC2, TPS40170RGY

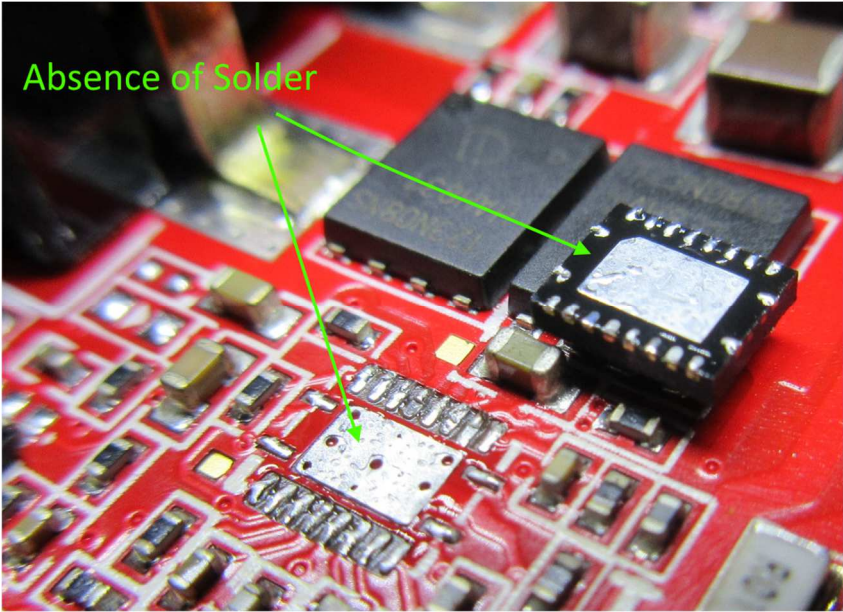
There has been a production issue associated with IC2 that has resulted in an unacceptable 6.5% failure rate. Looking for where to minimise potential failure causes. There is some concern the soldering may contribute to the failure. It is common to find this IC does not have solder wetted to form a proper fillet to the terminal sides. Moisture / shelf-life may contribute to the low solder wetting.



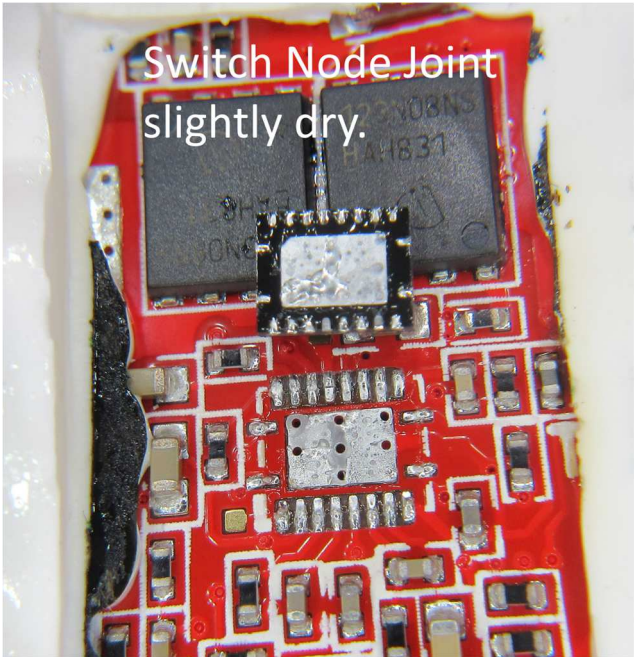
The solder paste design and resulting stencil printing looks good.



The 0.3mm vias may be wicking some center pad solder.



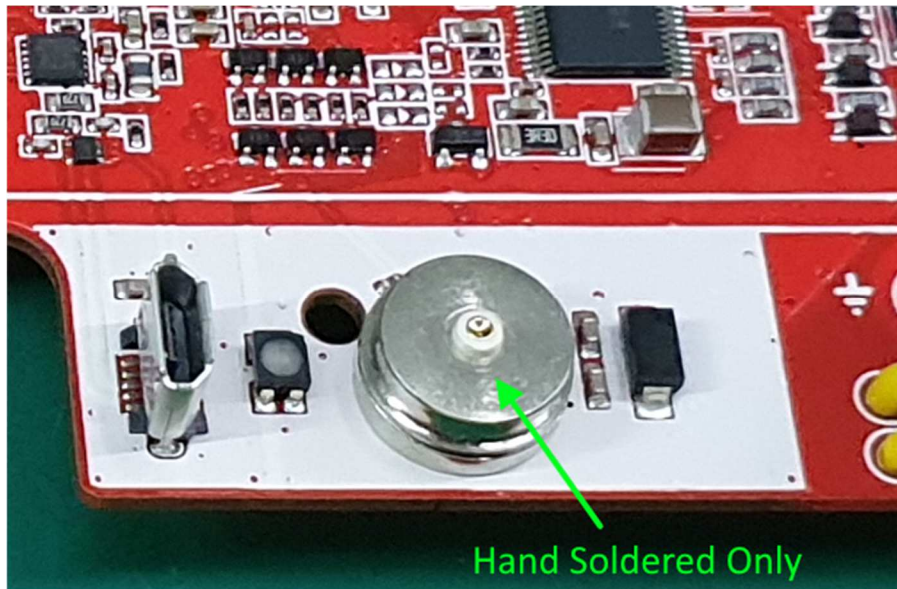
The top layer copper is 70um and the center pad has significant thermal heat sinking. Reflow infrared may have some shadow from the nearby large inductor. These both may reduce reflow heat for good wetting.



Could Union please consider how to improve IC2 solderability?

5.5 CN7, MAGNETIC CONNECTOR

Important reminder... connector must be hand soldered after wave solder process. **Do not wave solder.** The connector is magnetic and must not be subjected to high heat.



6 COMPONENT QUALITY ISSUES

None.

7 SUMMARY

1. PCB drill file change recommended to improve wire soldering.
2. Improve USB connector through hole soldering.
3. IC2 solderability to be improved.

<end of report>