

1. Introduction

SMD chips, size 0805 or 0603, shacked out of a SMD assortment box, will have a 50% chance that the chips are top-up, ready to be placed on a PCB.

By picking a chip up with a tweezers and dropping you get by statistics theory another 50% chance to get the top surface up, but in reality only 40 % it will become top-up and 10% will fly away somewhere in your lab, if they do, use micro-fibre tissue on your work-surface!

Here we show a well operating low cost prototype for a SMD chip turn-over.
 The mechanical theory about this device (see appendix) is long, no need to read it!

2. SMD Chip Turner Prototype

<p>SMD Chip Turner by Cliff Jumping Brass D25x3</p>	<p>SMD Resistors 0603: 1.53x0.76x0.49 mm 0805: 2.0x1.27x0.52 mm</p>	<p>Fig. 1: Brass Tool for a reliable SMD chip turn-over application.</p>

3. Practical Experiments

<p>Fig. 2: Initial situation: all SMD component upside down.</p>	<p>Fig. 3: Push an SMD component SLOWLY over the cliff and let it drop.</p>

4. Experimental Results



Fig. 4:

- All SMD components pushed over the cliff.
- All SMD components turned over correctly to their top side.
- 99% reliability, if you push the SMD chips really SLOWLY over the cliff!
- No difference if you push the SMD at the long or at the small side over the cliff!

5. Appendix: Mechanics Theory

- When an athlete jumps from a cliff (tilting breast to the front, feet still at the border) the body will turn a little bit by earth gravity.
- This generates a momentum.
- In our case the momentum is applied at the "easy axis", stable for salto mortale!
- The moment of inertia will turn the athlete further during his travel to the water.
- If the athlete does not pay attention, he will smash probably with his back onto the water!

Bad for the athlete, but good for our SMD chips: With a travel height of 2 mm the SMD chips will turn-over perfectly!