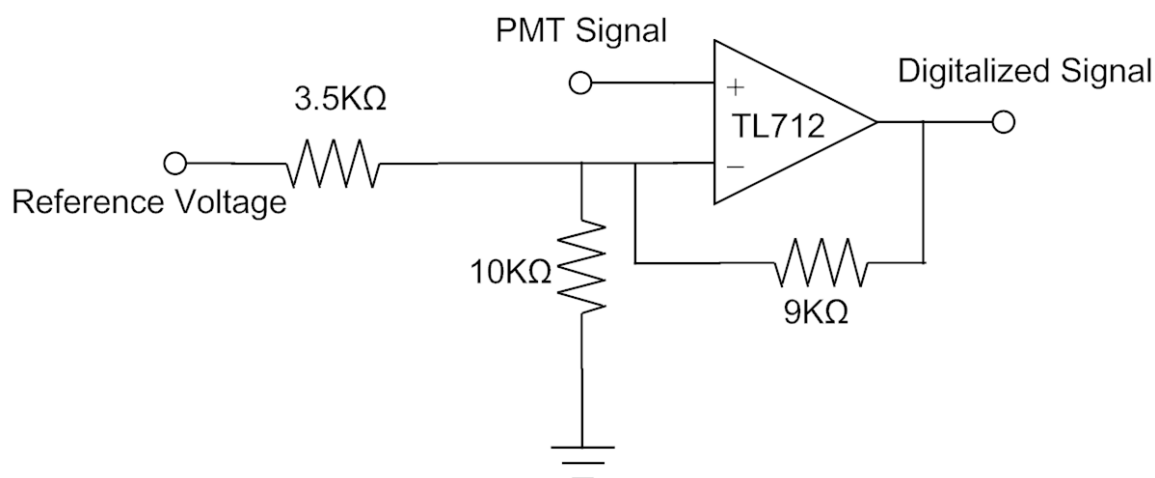


## Droplet Sorting Based on the Number of Encapsulated Particles Using a Solenoid Valve

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**Figure S1.** Diagram of the comparator circuit.

All the videos can be played by Windows Media Player or QuickTime Player.

**Video 1. (duration: 15 s)** The simulation of the deflection process by pressure actuation by COMSOL Multiphysics 4.2. The simulation is simplified by only examining the oil phase. The video shows the process occurring in 15 ms. The pressure pulse (1 psig and 7 ms duration) was applied at the actuation channel at 4-10 ms. The color scale indicates the velocity magnitude. The video shows that the pressure pulse would sweep a droplet at the exit of the interrogation channel (the vertical narrow channel) into the collection channel (the left wide channel).

**Video 2. (duration: 15 s)** The sorting of two-bead droplets from a mixed droplet population. The video was recorded at a frame rate of 26 fps and is played at 5 fps. The flow rates used for the aqueous phase and the oil phase were 0.23 and 3.7  $\mu\text{l}/\text{min}$ , respectively.

**Video 3. (duration: 16 s)** The sorting of two-cell droplets from a mixed droplet population. The video was recorded at a frame rate of 15 fps and is played at 5 fps. The flow rates used for the aqueous phase and the oil phase were 0.15 and 3.7  $\mu\text{l}/\text{min}$ , respectively.