

# Matrices and Duplex Matrix

Improving upon their design.

## Maximizing the matrix

- For non-macropad keyboards, routing a matrix with one pin per row and column will almost always lead to inefficient results.
- With the same number of keys, a more "square" matrix will require less cols and rows total than a more "rectangular" one.
  - I.E. For 30 keys, 5x6 is 11 pins, while 2x15 is 17 pins.

## The Duplex Matrix

- Each "column" spans two physical columns.
- Two "rows" exist for each physical row.
- See schematic at bottom for a routing example.

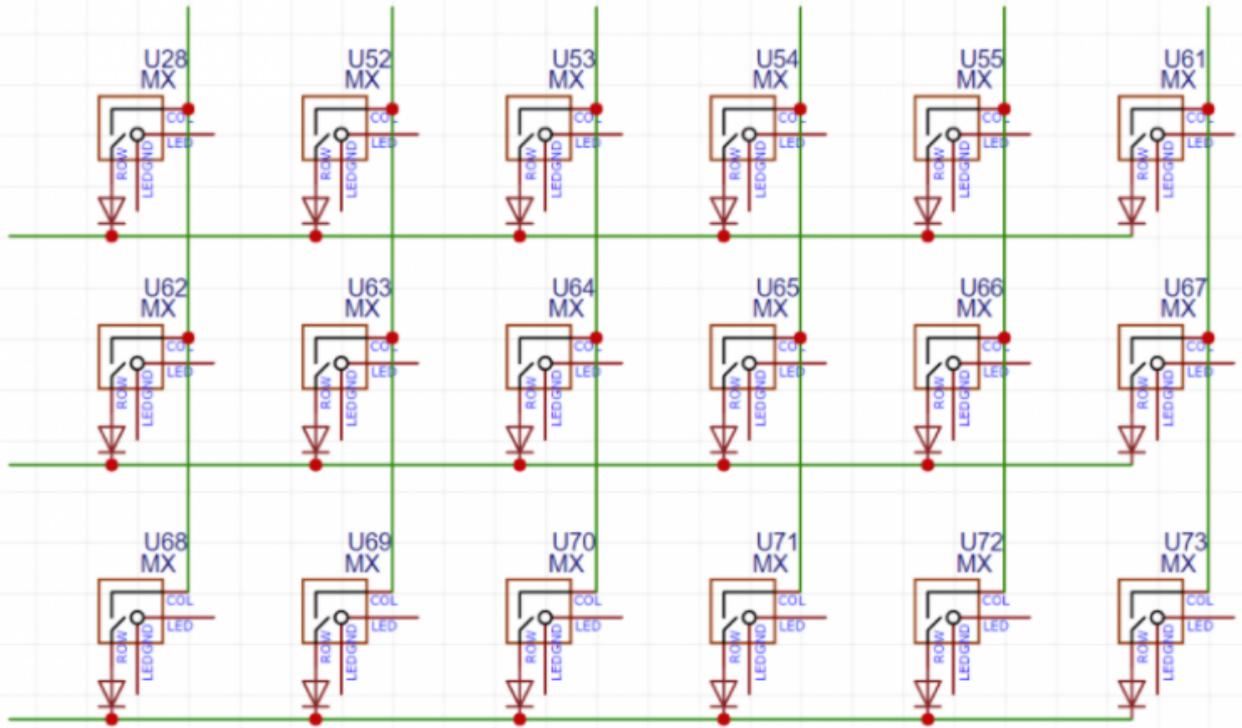
## Pros

- Fit more keys for rectangular keyboards using less pins
- More pins to use for fancy features
- Use cheaper controllers to reduce the final product cost

## Cons

- More complicated to wire
- Can be more difficult to add more keys to the matrix later on
- Harder to follow on a schematic

- Traditional Grid



- Duplex Grid

