

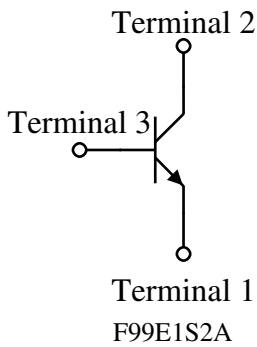
**Problem 2 - (10 points)**

a.) Draw the schematic of the circuit indicated below in the BJT layout and identify the collector, base and emitter terminals.

b.) Draw the A-A' cross-section to scale. The approximate physical thicknesses are: n<sup>+</sup> emitter diffusion 1.3μm, p-base diffusion 2.6μm, n-epitaxial layer 10μm, n<sup>+</sup> buried collector diffusion (not seen from the top view) - into the epitaxial layer 4μm and into the substrate 8μm, all oxide and metal thickness are approximately 1μm. (You may approximate the oxides and diffusions with straight edges for simplicity.) Assume that a n<sup>+</sup> buried layer is beneath all n-epitaxial regions.

Solution

a.)



b.) See layout on right.

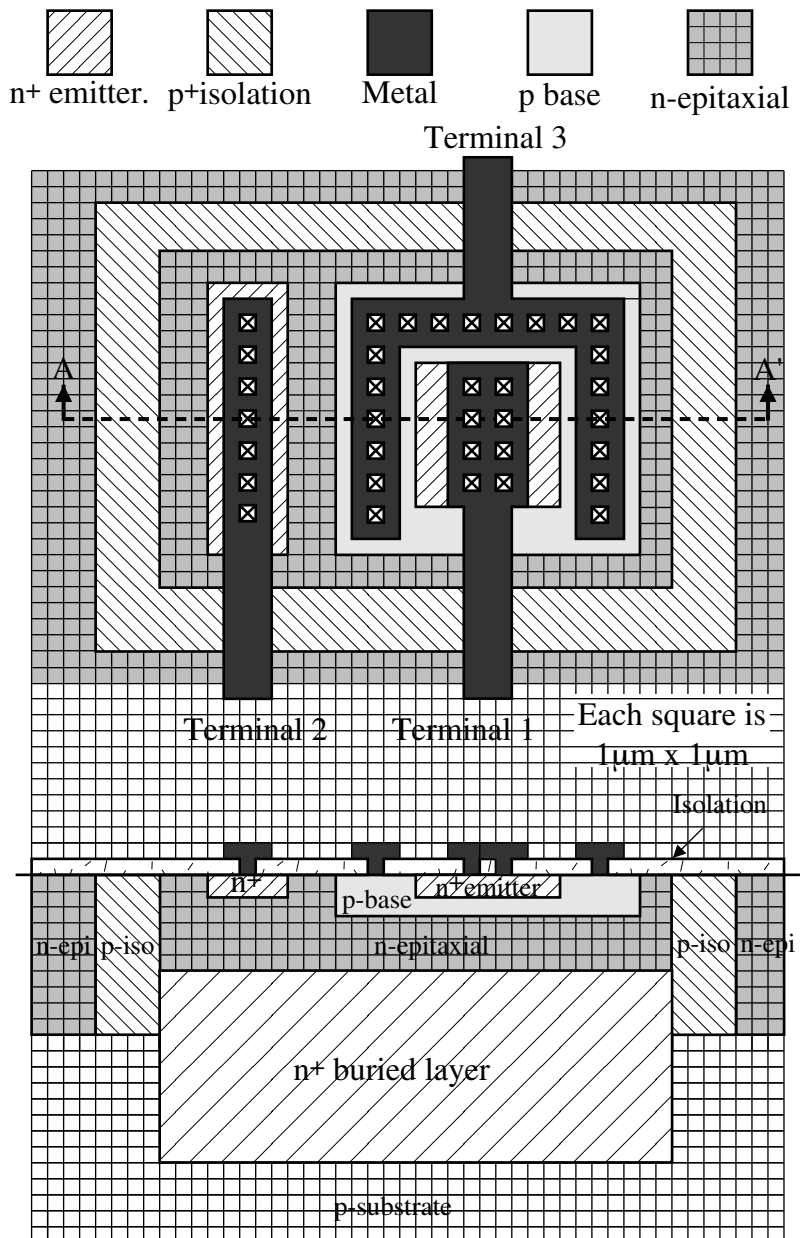


Fig. F99E1S2