# Pick-and-place head: Design Verification Report

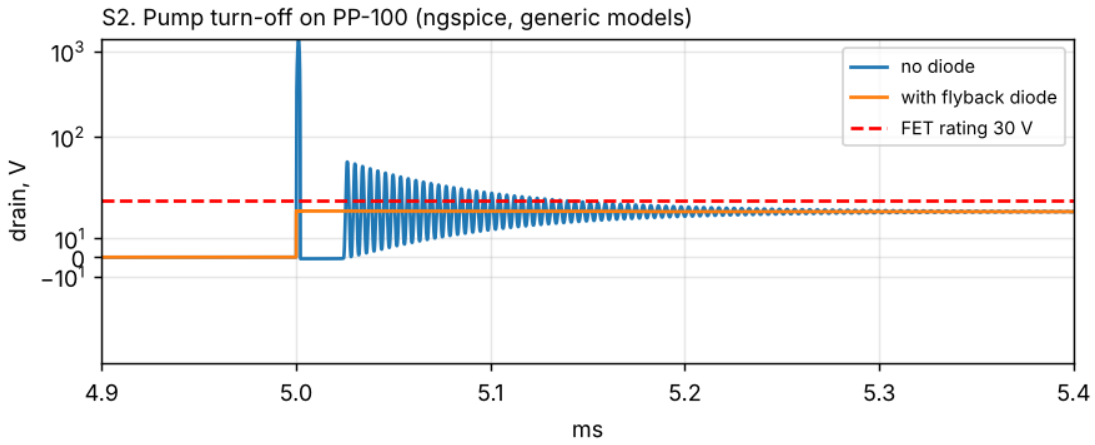
PNP-1 | Blaide product line | 17 November 2026 | Design only: nothing built or tested

What has been checked without hardware, by calculation, simulation or software test.

## Results

- PP-100: 10 nets, 0 shorts, 0 clearance violations, 0 open nets
- Firmware: normal cycle, empty pocket (3 tries then stop), part lost in transit, part stuck on release
- Planner on the 37-part light-line board: 35 placed, 2 by hand, about 5 minutes

| Check | Result |
|---|---|
| Pump turn-off, with diode | 24.4 V at the switch |
| Pump turn-off, without diode | 1324 V (model): the diode is essential |
| Switch rating | 30 V: margin too small, fit a 40 V or 60 V part |
| Firmware cases | normal cycle; empty pocket retried 3 times; part lost in transit; part stuck on release |
| Planner | 35 of 37 parts placed on the light-line board, 2 by hand |




**Board PP-100:** KiCad 7.0.11 design rule check: 0 errors or warnings, 14 cosmetic (footprints not in a library). Own checker: 0 shorts, 0 clearance violations, 0 open nets.

## Not verified

Everything in the test plan (document 04) needs hardware.