

(a)

```
.SUBCKT DI_1V8_ST28N AVDD_1V0 AVDD_1V8
+ AVSS FROM_PAD_1V8 TO_CORE_1V0
XC1 FILT_O AVSS CAPX10_CV angle=180
XC2 FROM_PAD_1V8 FILT_O AVSS RPP0_S0
+ xoffset=25 yoffset=15
```

```
XA5 AVSS TAPCELL_EV xoffset=20
XA2 FILT_O SCHMITT_O AVDD_1V8 AVSS SCX1_EV
```

```
XA5a AVSS TAPCELL_EV yoffset=20
XA3 SCHMITT_O INV_O AVDD_1V0 AVSS INV1_EV

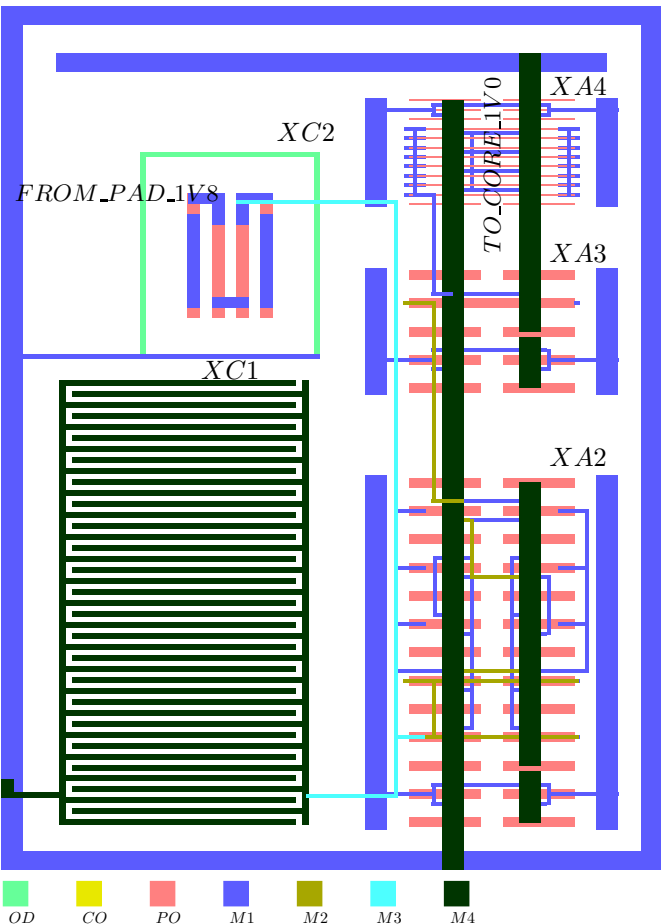
XA4 INV_O TO_CORE_1V0 AVDD_1V0 AVSS INV8_CV
+ yoffset=15
XA6 AVSS TAPCELL_CV
```

```
.ENDS
```

(b)

```
{ "name" : "DI_1V8_ST28N",
  "boundaryIgnoreRouting" : 0,
  "composite" : 1, "noPowerRoute" : 1,
  "schematic" : 0,
  "class" : "Layout::LayoutDigitalCell",
  "afterPlace" : {
    "addPowerRings" : [
      ["M1", "AVDD_1V0", "t"],
      ["M1", "AVSS", "btr1"]
    ]
  },
  "beforeRoute" : {
    "addPowerConnections" : [
      ["AVDD_1V0", "XA", "top"],
      ["AVSS", "XC", "left"],
      ["AVSS", "XA4|XA2", "bottom"]
    ],
    "addConnectivityRoutes" : [
      ["M3", "FILT_O", "--|-", "onTopR"],
      ["M2", "SCHMITT_O", "-|--"],
      ["M1", "INV_O", "-|--"]
    ]
  }
}
```

(d)



(c)