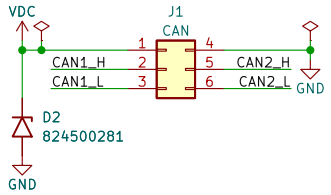
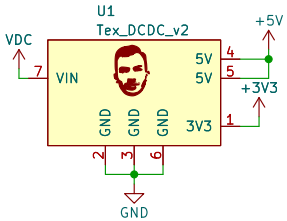
Main connector

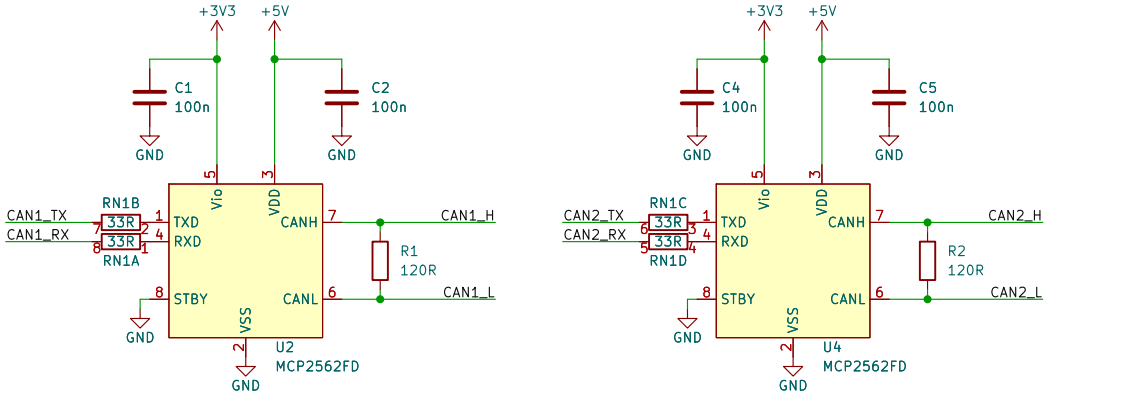


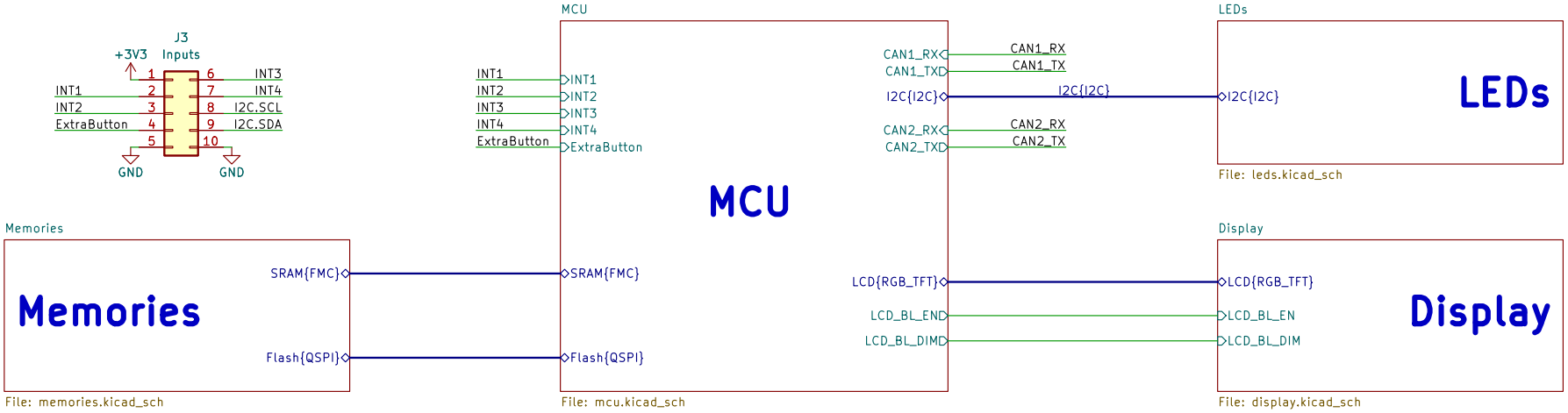
Power supply



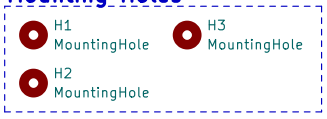
This DCDC circuit is able to supply
5V@5A switching and
3V3@800mA
Maximum input voltage is 28V

CAN interface





Mounting Holes



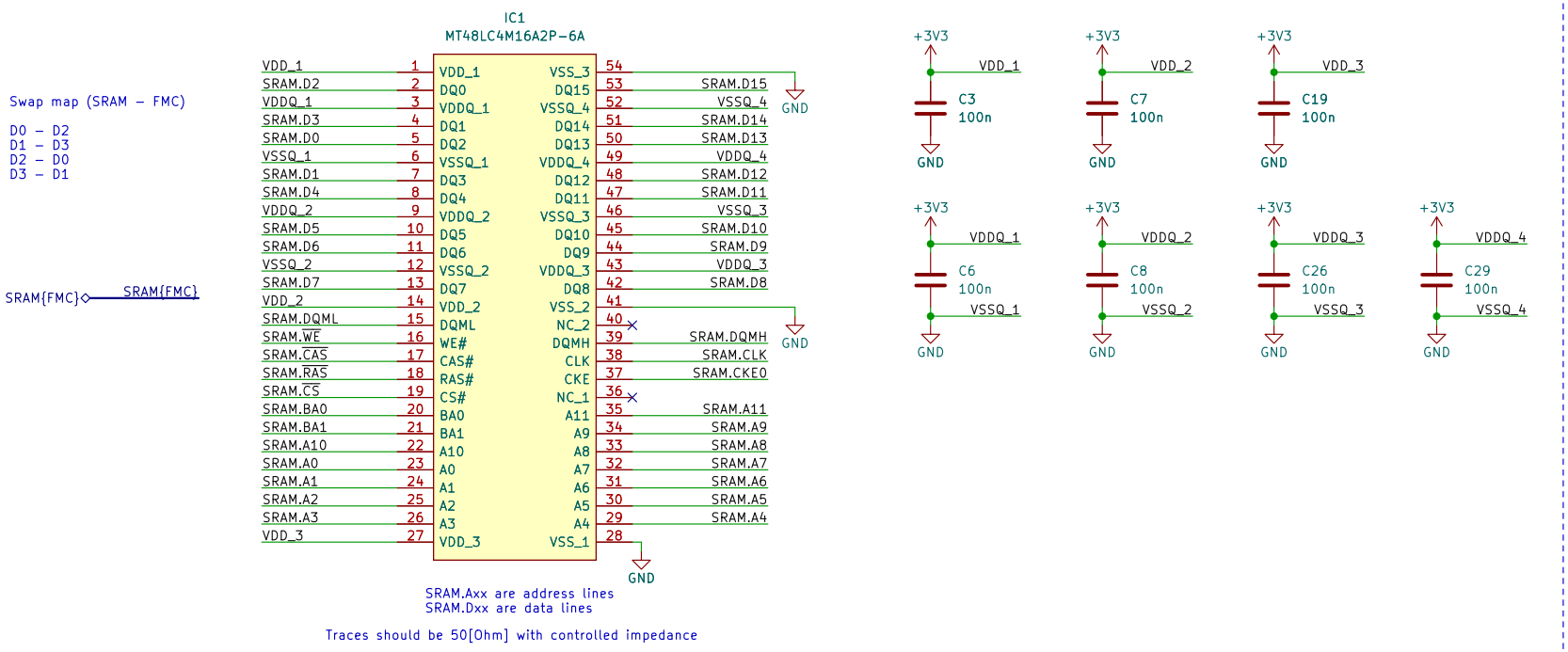
Thomas Nonis
Alessio Pasin
E-Agle TRT

Sheet: /
File: hw-fenice-evo-steering-wheel.kicad_sch

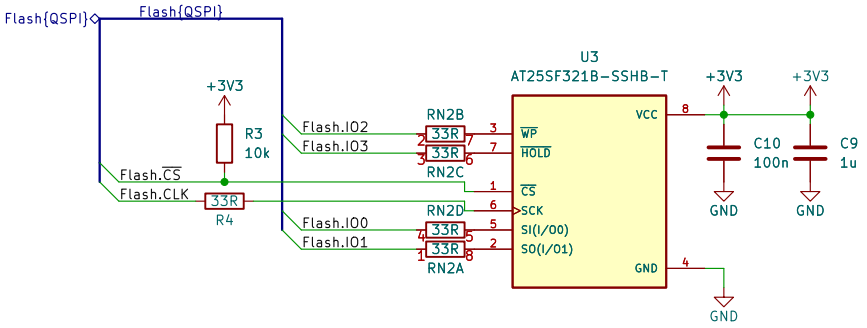
Title: EA-02B Steering Wheel

Size: A4	Date: 2023-01-20	**Rev: 1.0**
KiCad E.D.A. kicad (6.0.8)		Id: 1/5

SDRAM



QUAD-SPI FLASH MEMORY



Thomas Nonis
Alessio Pasin
E-Agle TRT

Sheet: /Memories/
File: memories.kicad_sch

Title: EA-02B Steering Wheel

Size: A4	Date: 2023-01-20	**Rev: 1.0**
KiCad E.D.A. kicad (6.0.8)		Id: 4/5

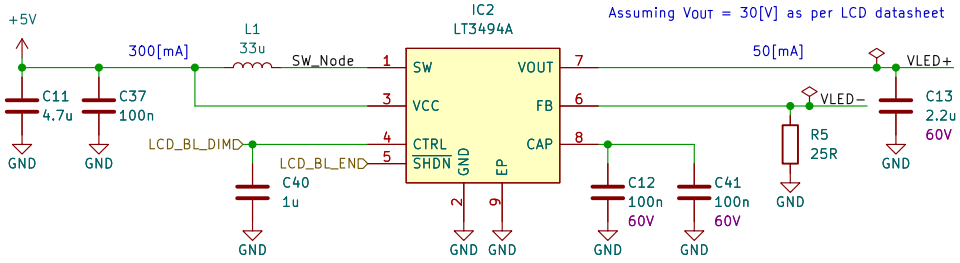
DISPLAY: EA TFT050-84ANN
Size: 5 inch
Dimensions: 800*480
Protocol: RGB TFT

Datasheet

Backlight supply

VLED:
- typ: 27[V]
- nom: 30[V]
- max: 34[V]

ILED = 40[mA]



Feedback resistor sizing:

V_{FB} = 1.225[V]
$I_{LED} = V_{FB}/R_{SENSE}$

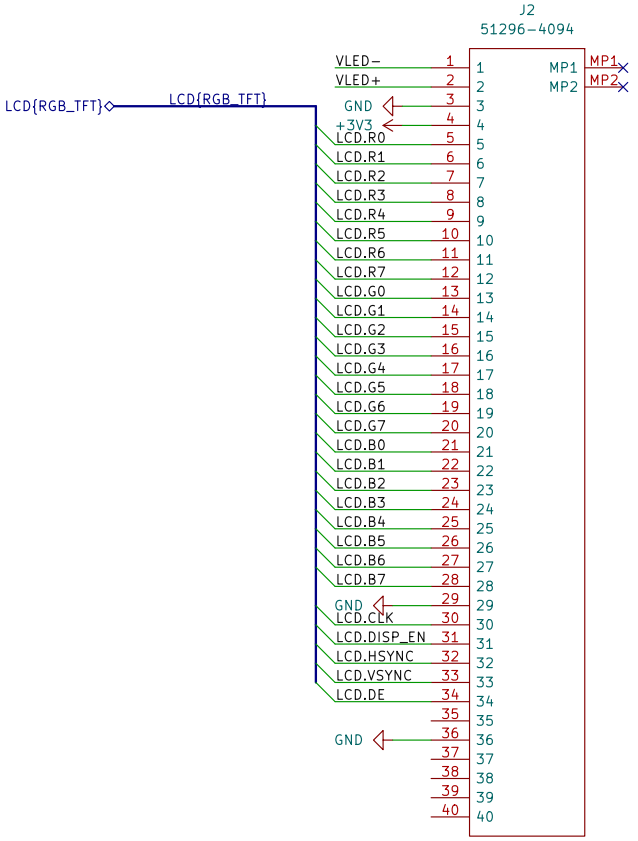
I_{MAX} = 50[mA] -> R_{SENSE} = 1.225[V]/0.05[A] = 24.5[Ohm]
I_{Nom} = 40[mA] -> R_{SENSE} = 1.225[V]/0.04[A] = 30.6[Ohm]

I_{MAX_ACTUAL} = 1.225[V]/25[Ohm] = 49[mA]
$P_{MAX} = R*I^2 = 25 * (0.049)^2 = 60$[mW]

If CTRL is below 1.225[V] its value will override V_{FB},
resulting in a lowering of the output current
following the formulas above with the new V_{FB}.

If no control is desired, keep CTRL above 1.5[V]

RGB TFT parallel connector



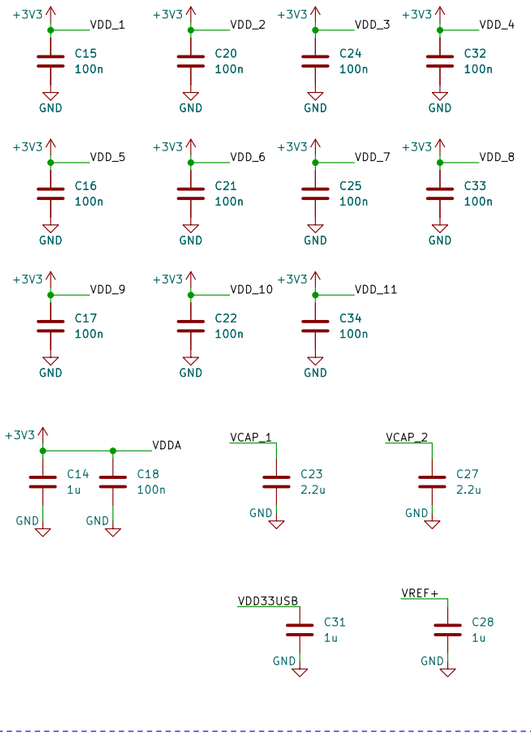
Thomas Nonis
Alessio Pasin
E-Agle TRT

Sheet: /Display/
File: display.kicad_sch

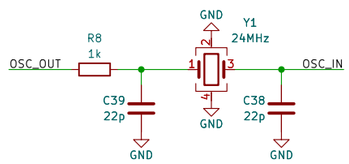
Title: EA-02B Steering Wheel

Size: A4	Date: 2023-01-20	**Rev: 1.0**
KiCad E.D.A. kicad (6.0.8)		Id: 5/5

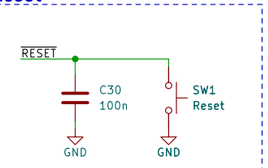
Decoupling



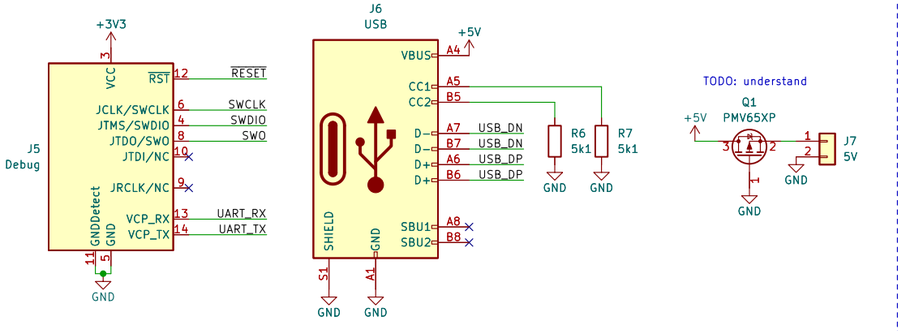
Clock



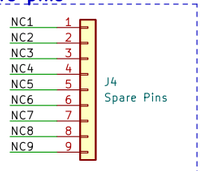
Reset



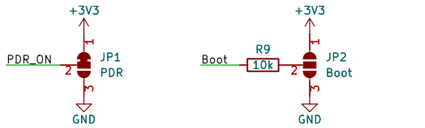
Debug connectors



Spare pins



MCU Config

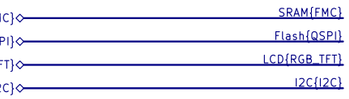


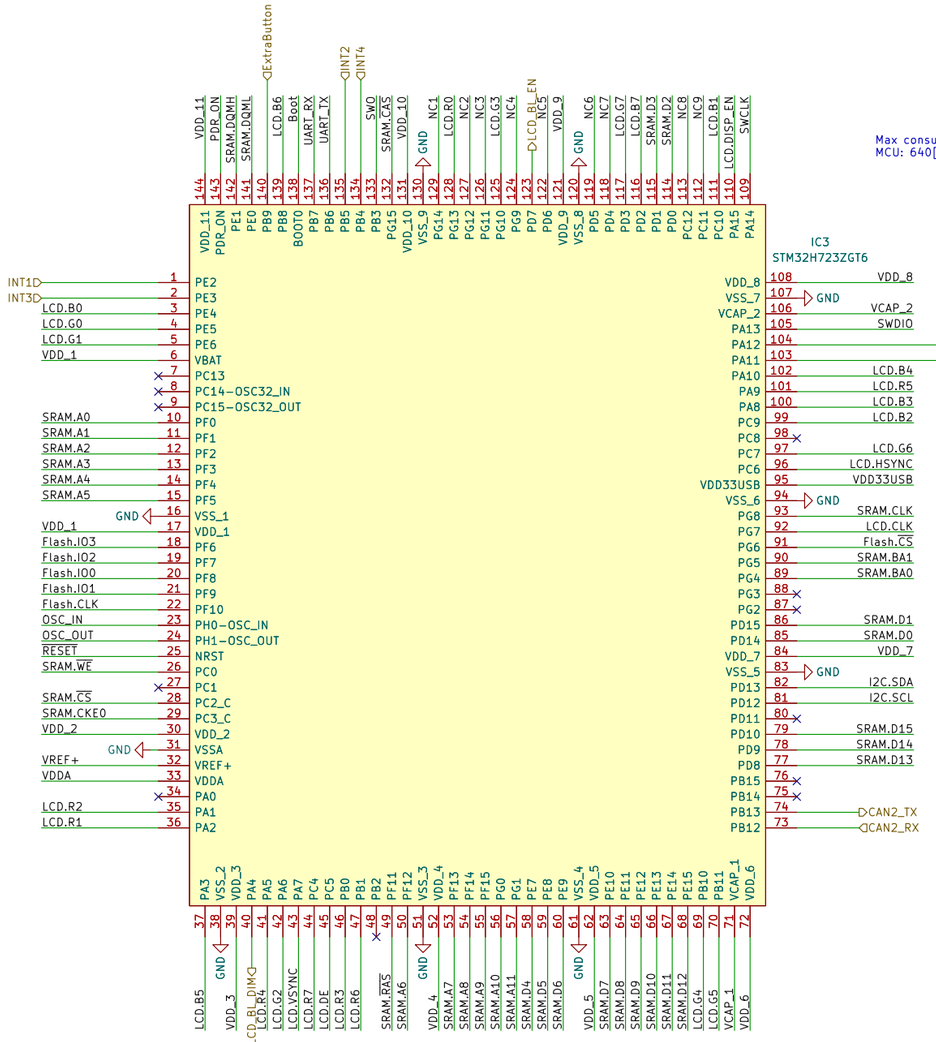
Solder Boot to 3V3 to boot from System Memory (starting at 0x1FF0 0000)
Solder Boot to GND to boot from User Flash (starting at 0x0800 0000)

Solder PDR to 3V3 to enable Power−on reset and power−down reset
Solder PDR to GND to disable Power−on reset and power−down reset

Refer to AN5419 for more information

Bus definitions





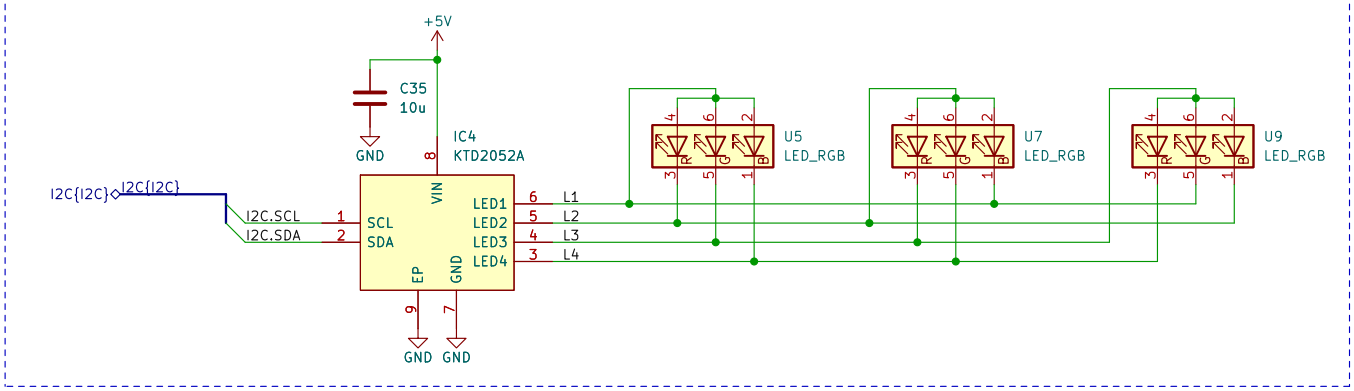
Thomas Nonis
Alessio Pasin
E-Agle TRT

Sheet: /MCU/
File: mcu.kicad_sch

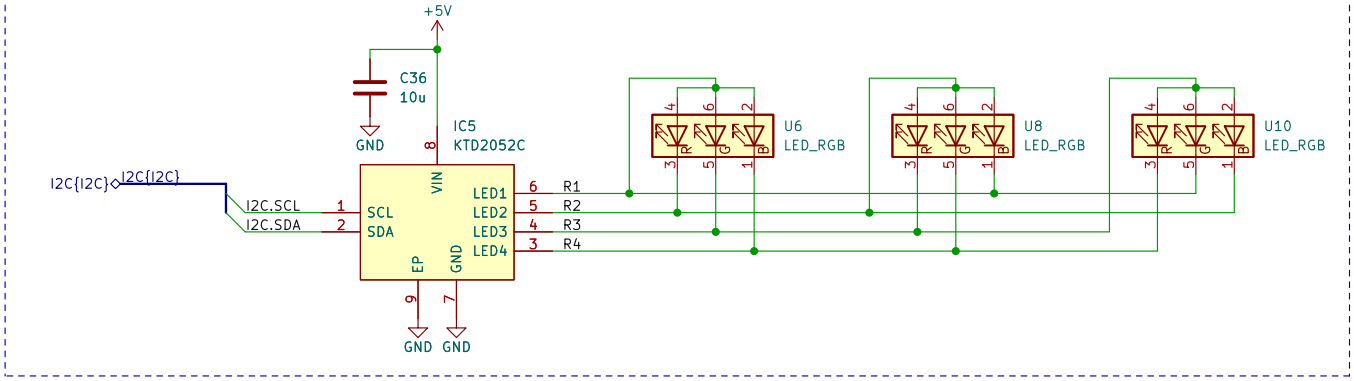
Title: EA-02B Steering Wheel

Size: A3	Date: 2023-01-20	**Rev: 1.0**
KiCad E.D.A. kicad (6.0.8)		Id: 6/5

Left LEDs



Right LEDs



Address is not configurable and depends on purchased version:
KTD2052A/B: 0x74
KTD2052C/D: 0x75

-B/D versions breathe at powerup and on reset
-A/C stay off by default

Drivers are designed for 4xRGB and have fixed 25% duty cycle

Thomas Nonis
Alessio Pasin
E-Agle TRT

Sheet: /LEDs/
File: leds.kicad_sch

Title: EA-02B Steering Wheel

Size: A4	Date: 2023-01-20	**Rev: 1.0**
KiCad E.D.A. kicad (6.0.8)		Id: 6/5