

Reverzní inženýrství polovodičů.

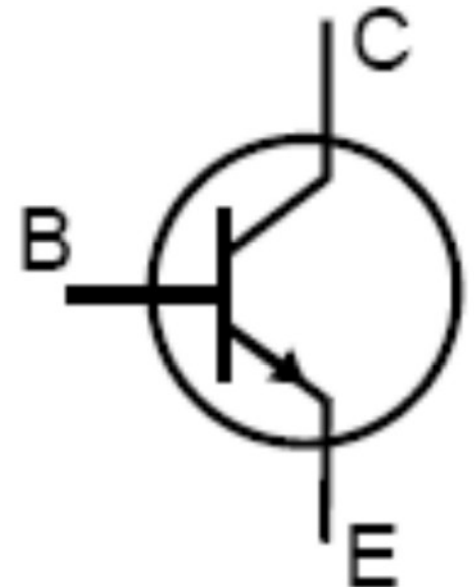
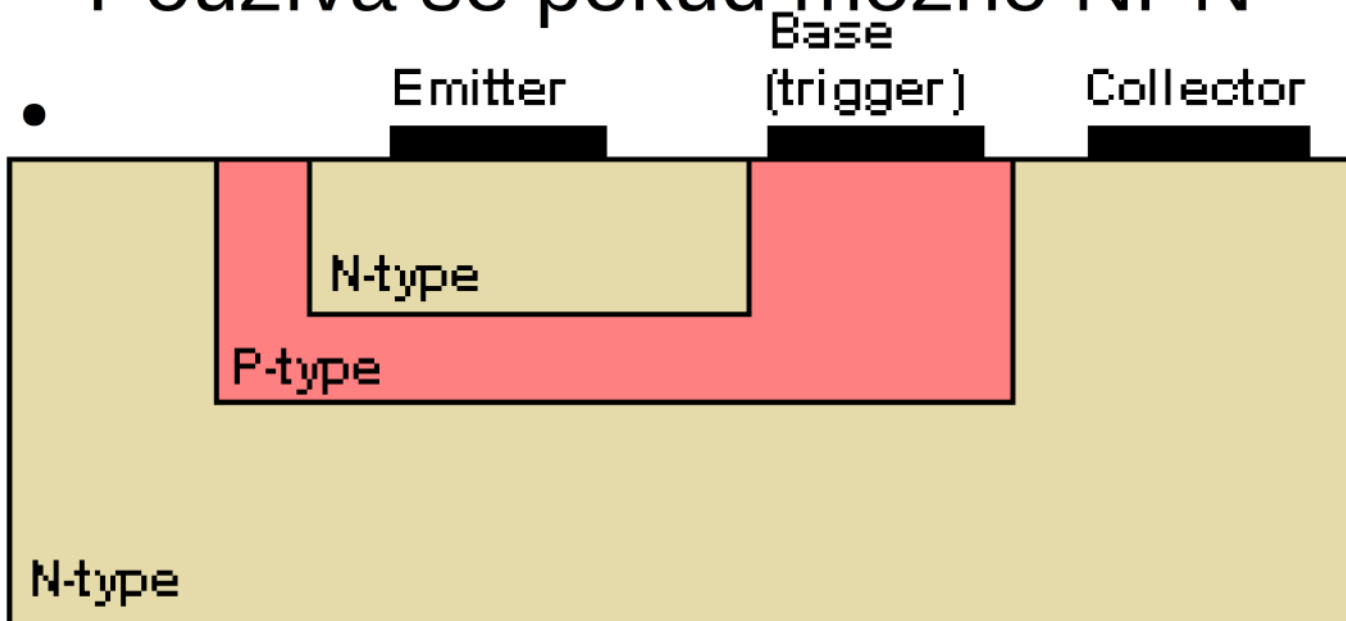
Základní součástky logických obvodů typu TTL s
bipolárními tranzistory

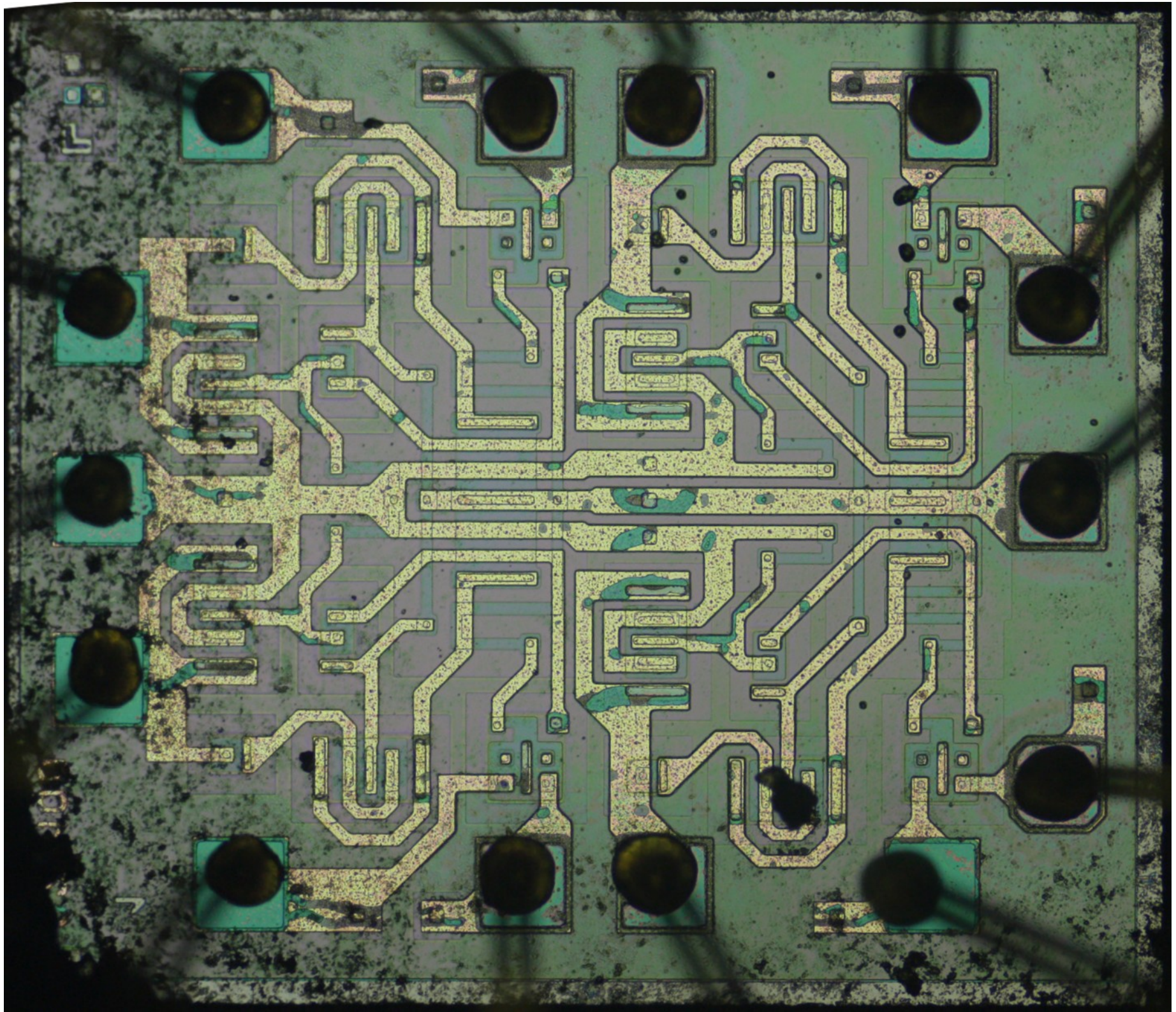
Proč TTL s bipolárními tranzistory?

- Jednodušší na pochopení
- Jednotlivé prvky jsou (většinou) vidět

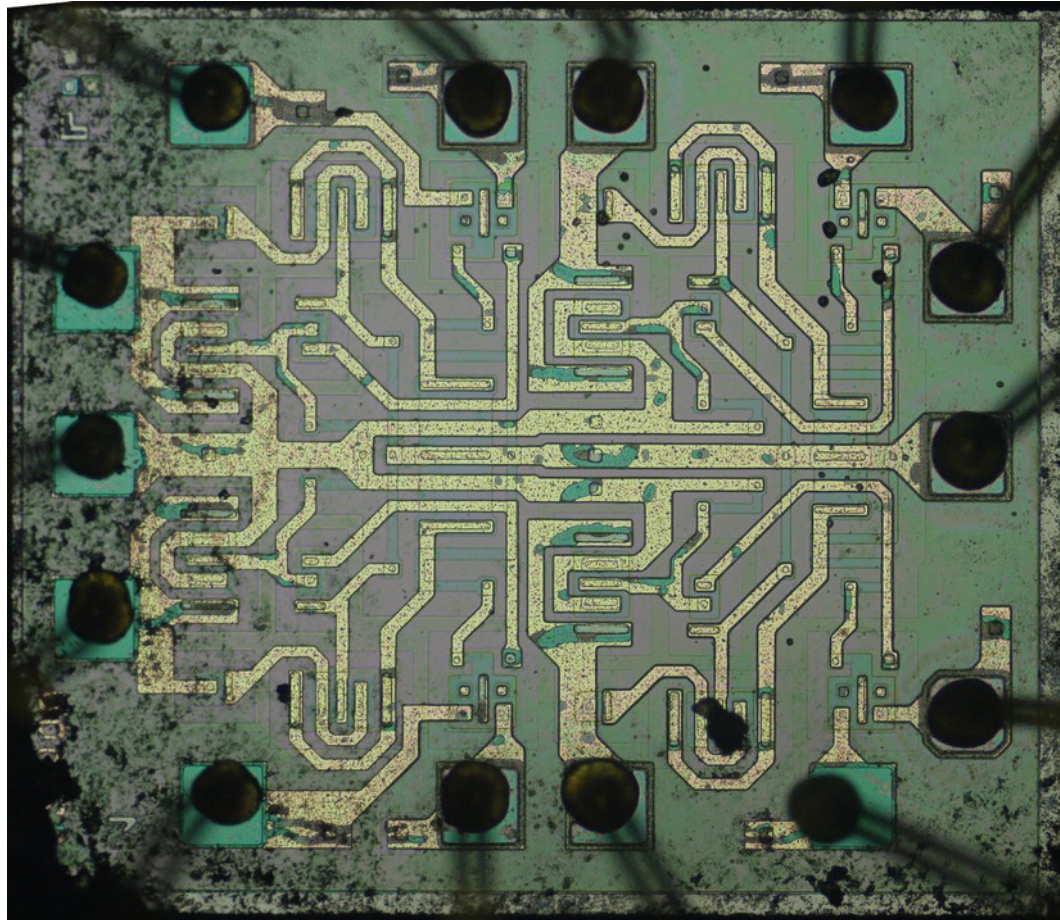
Bipolární tranzistor

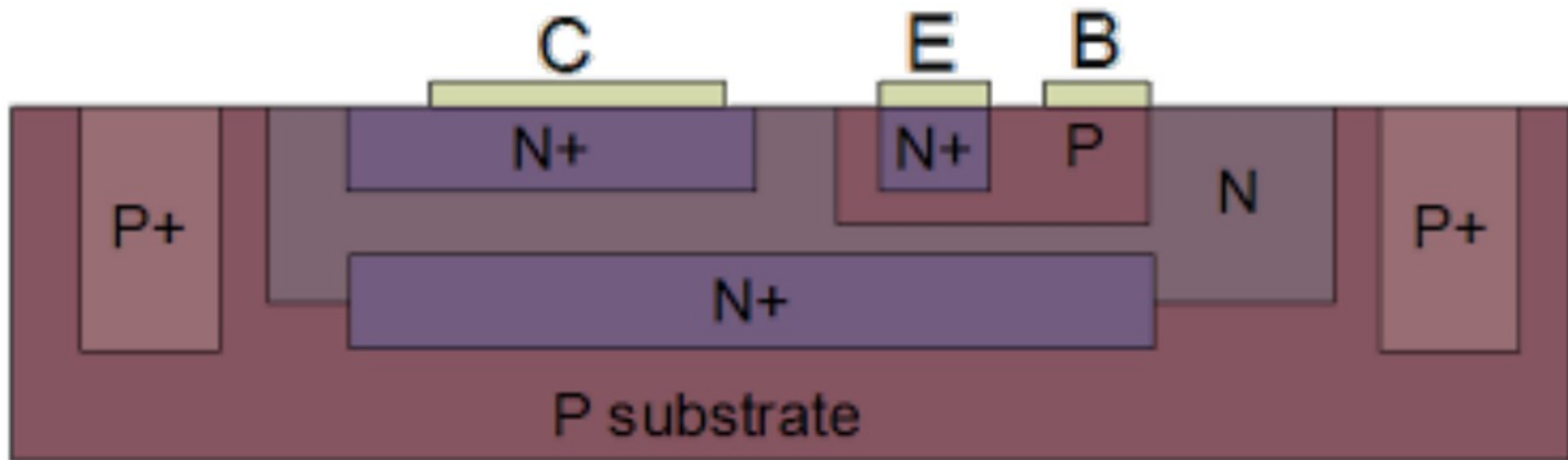
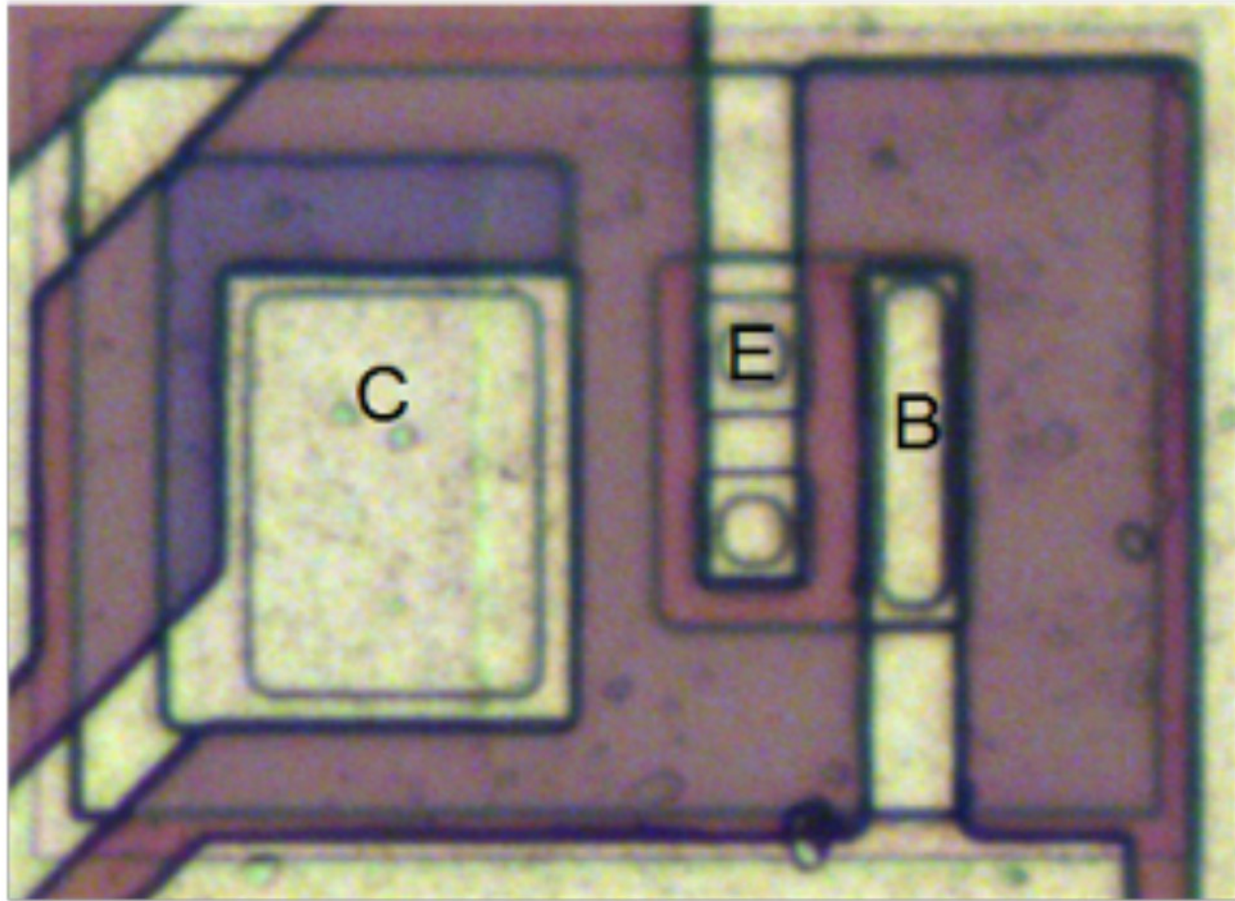
- Je energeticky náročnější než FET tranzistor
- Je rychlejší
- Dva typy: NPN, PNP
- Používá se pokud možno NPN



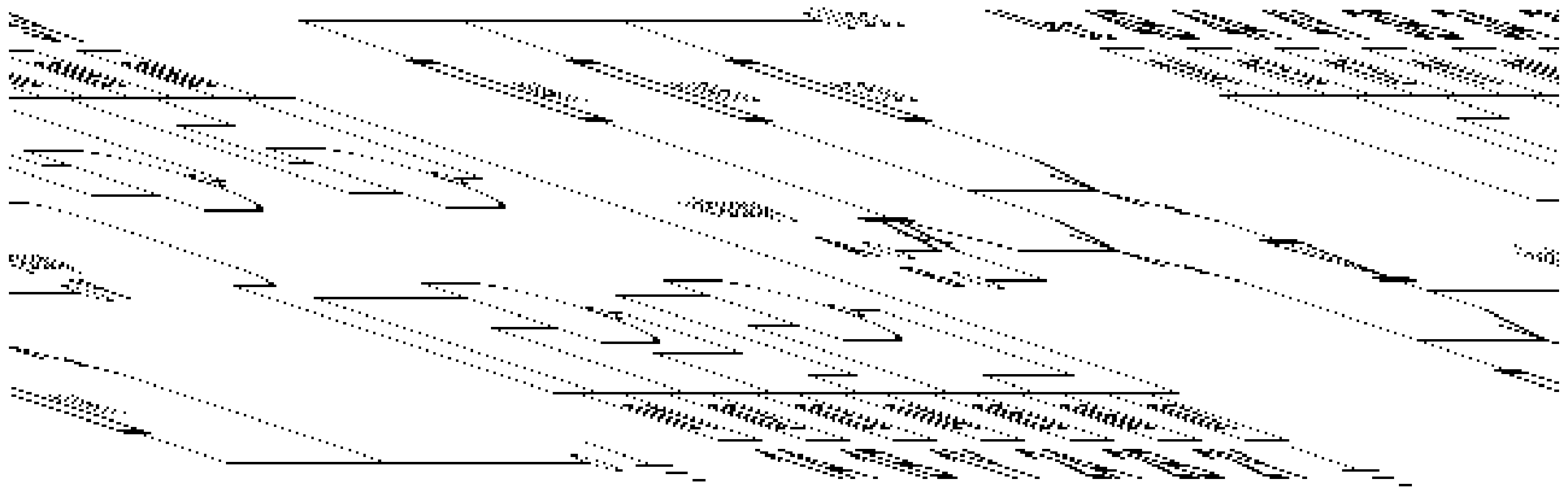


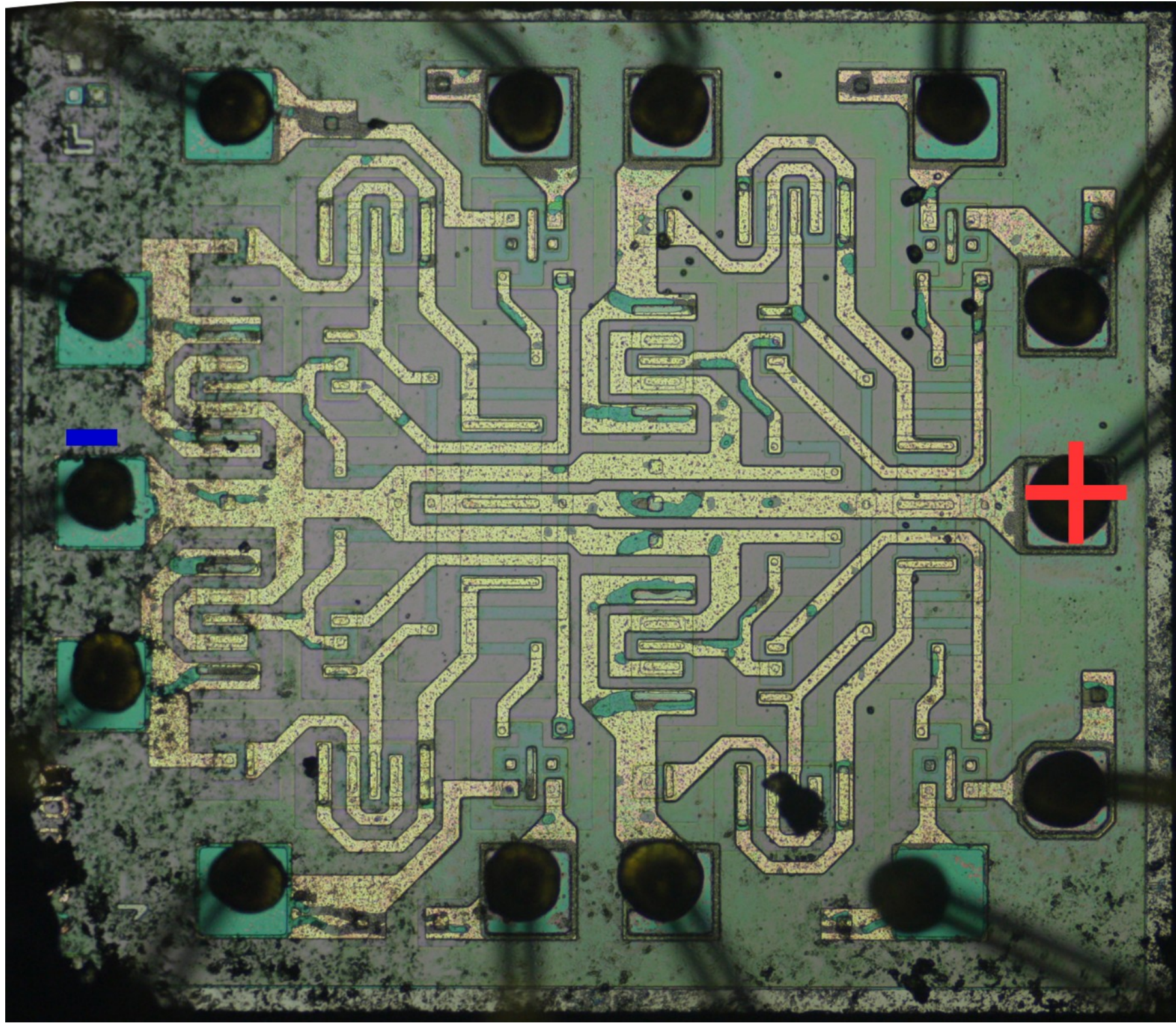
Najdi 16 tranzistorů

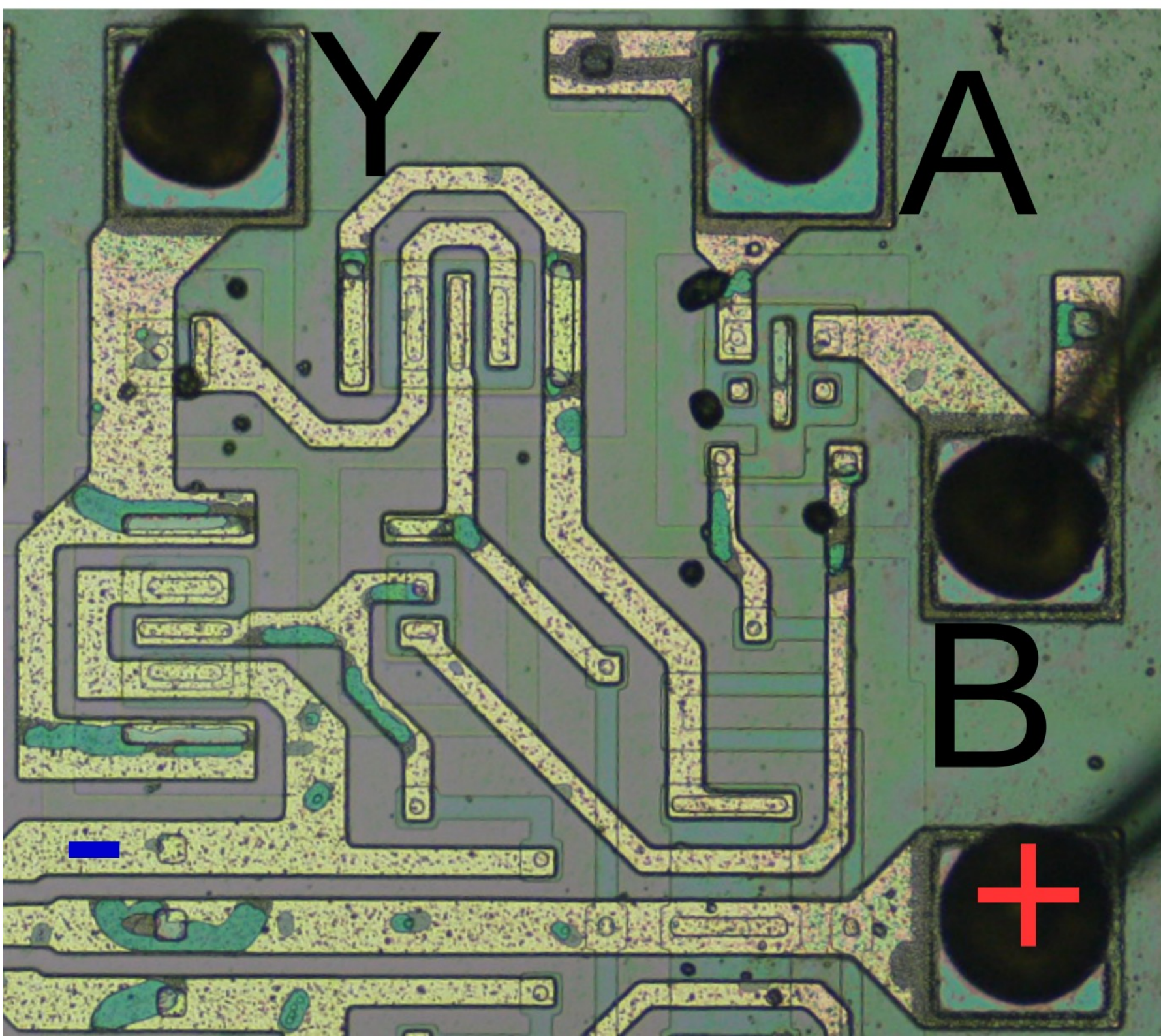




Tesla MH7400 – 4xNAND







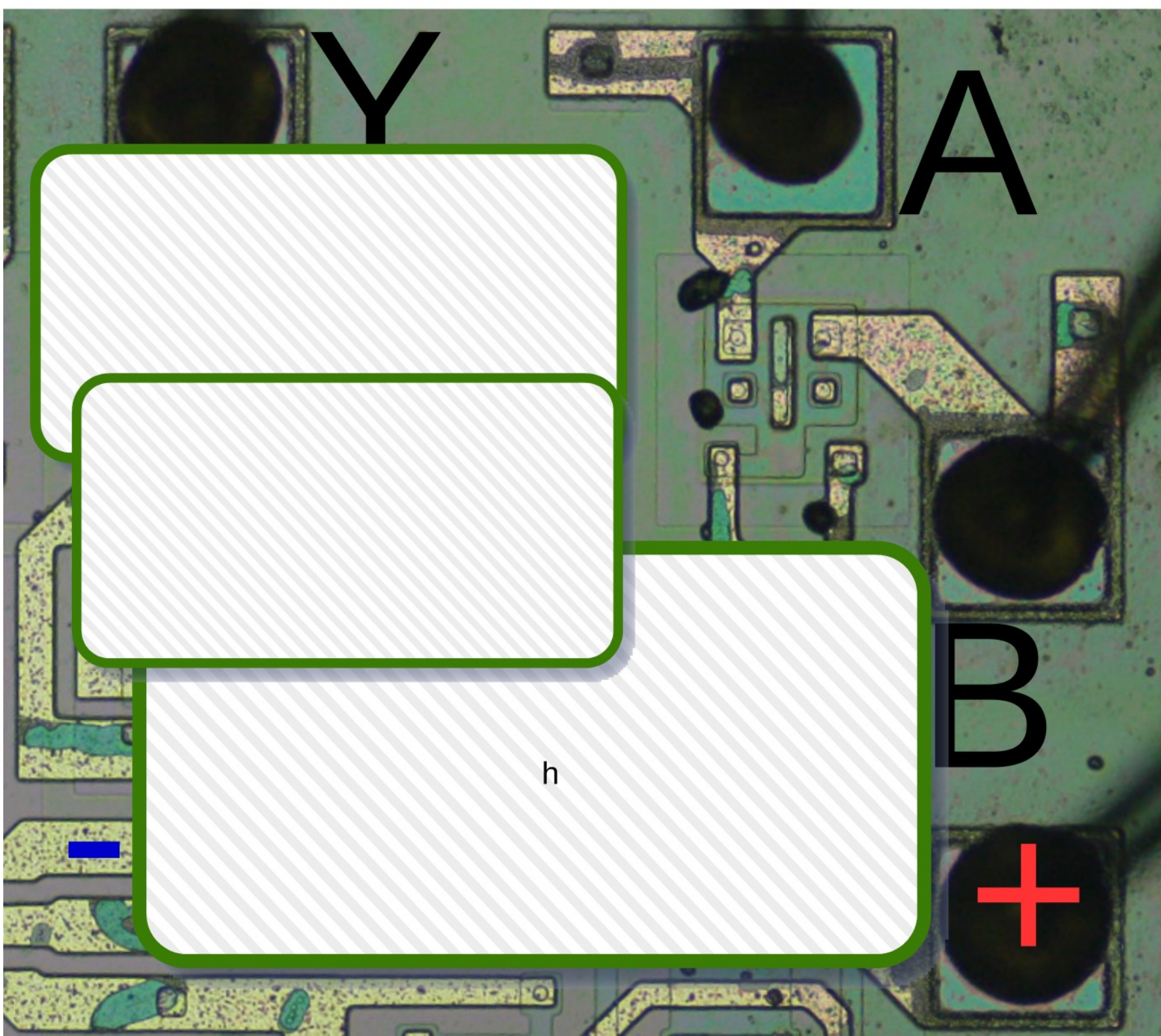
Y

A

B

+

—



Y

A

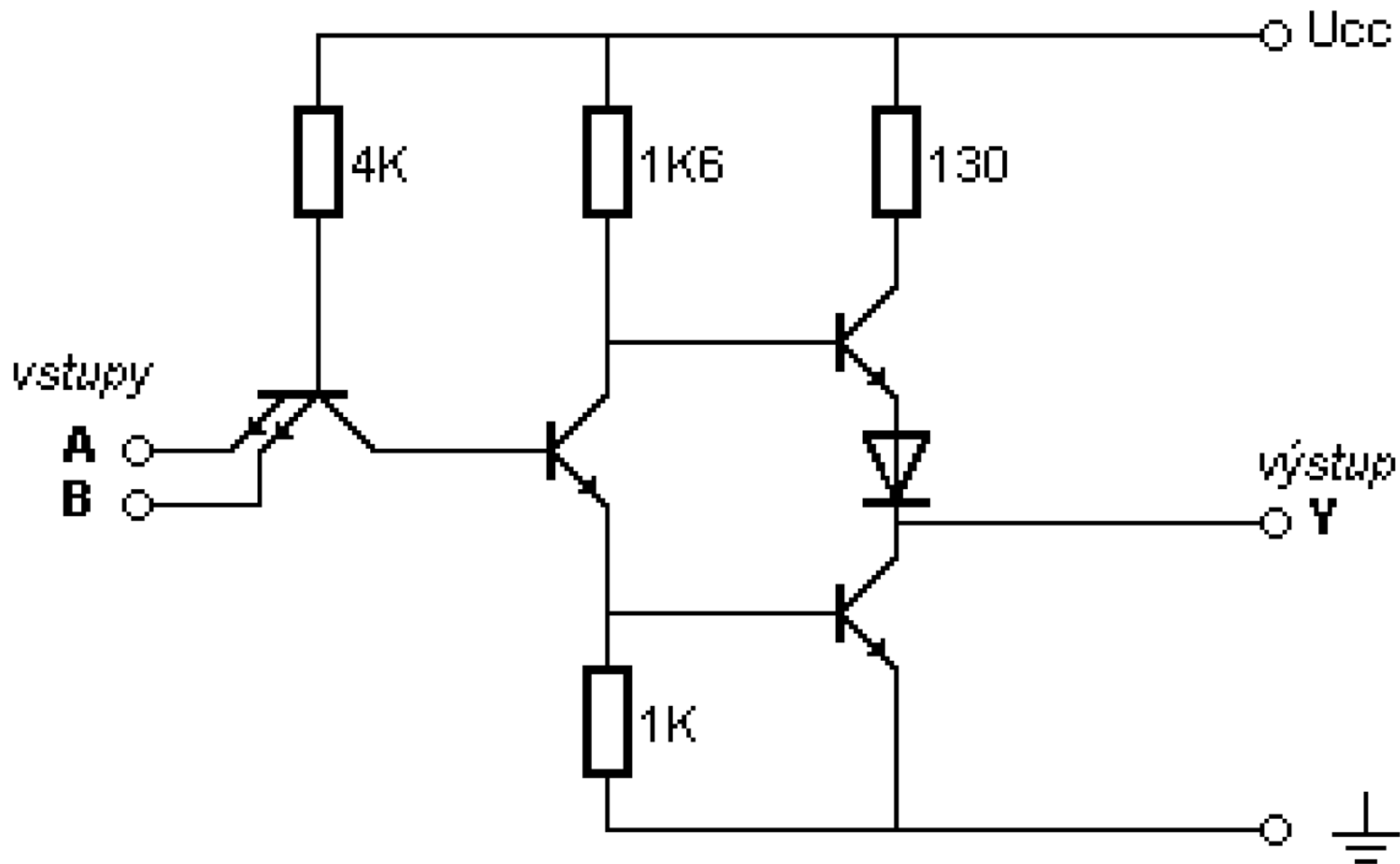
B

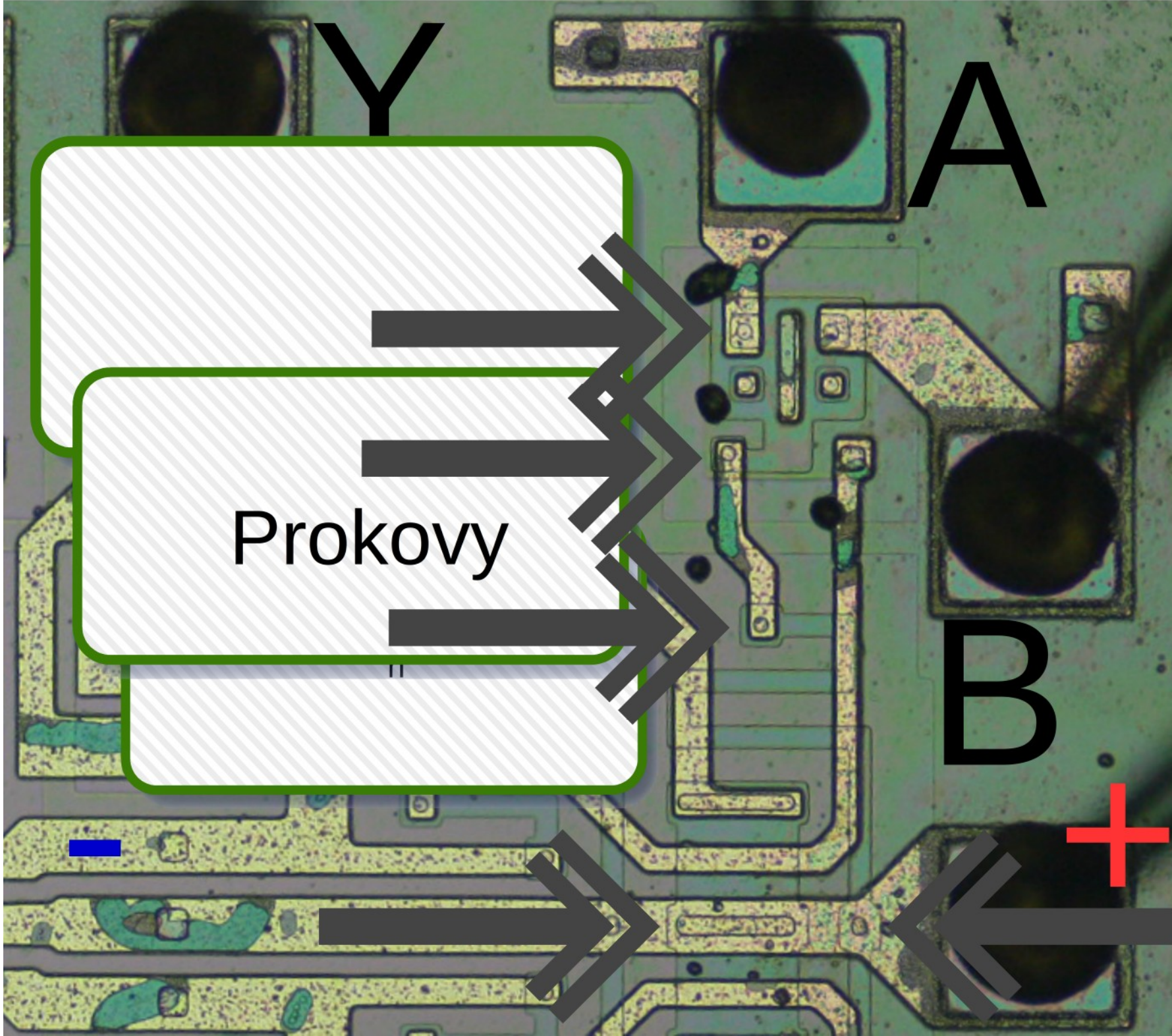
+

-

h

Tesla MH7400 – 4xNAND





Prokovy

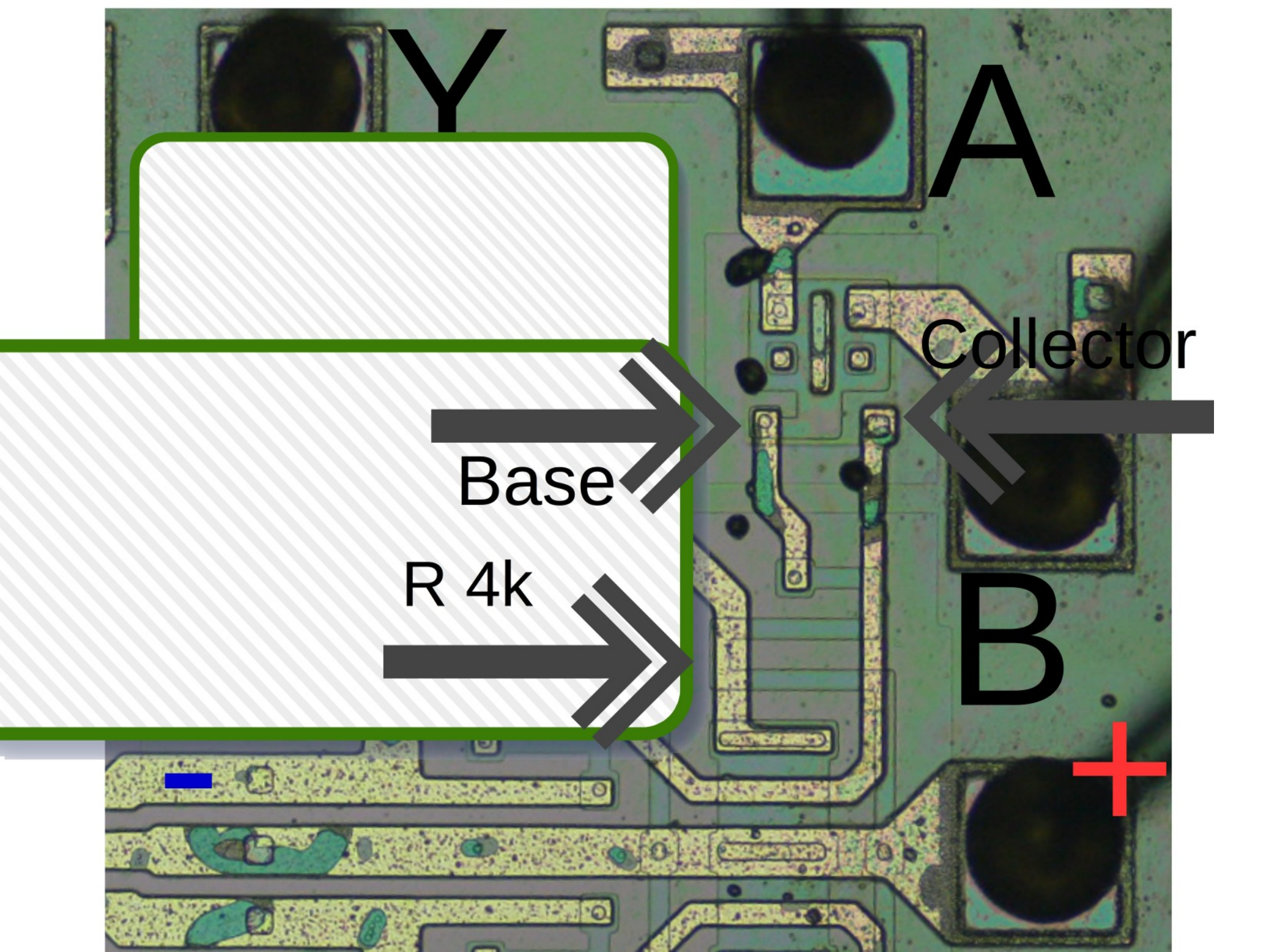
Y

A

B

-

+



Y

A

Collector

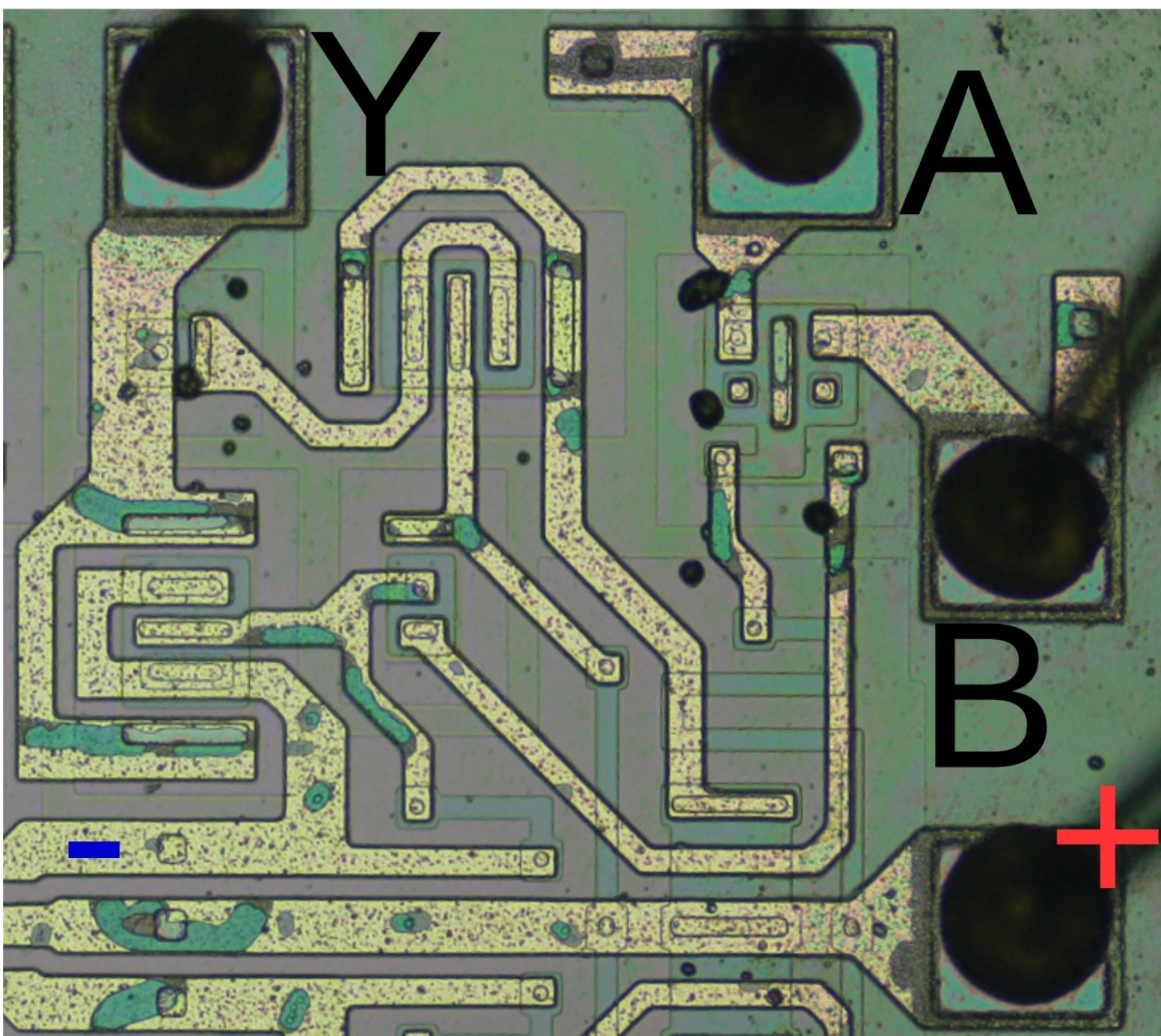
Base

R 4k

B

-

+



Y

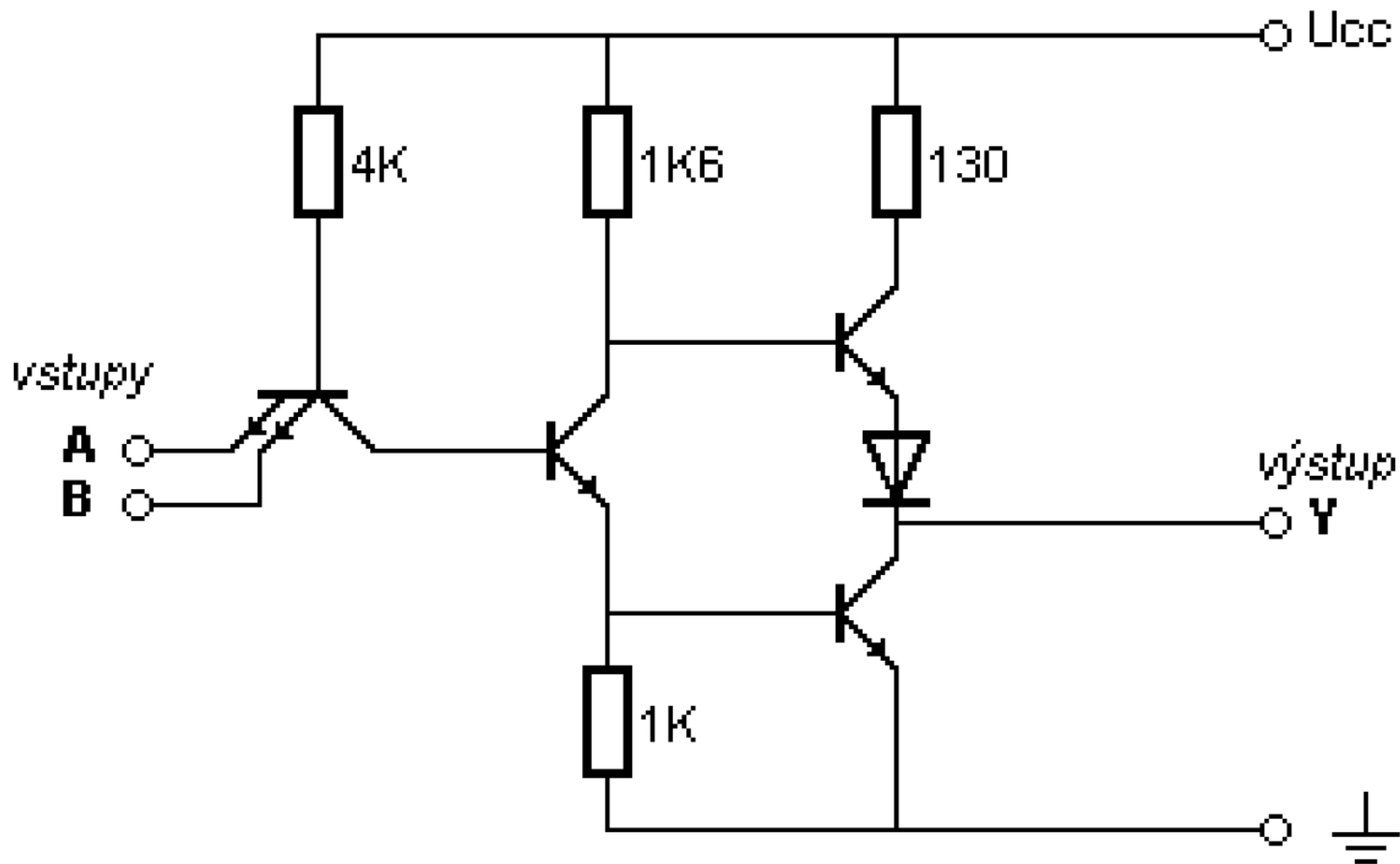
A

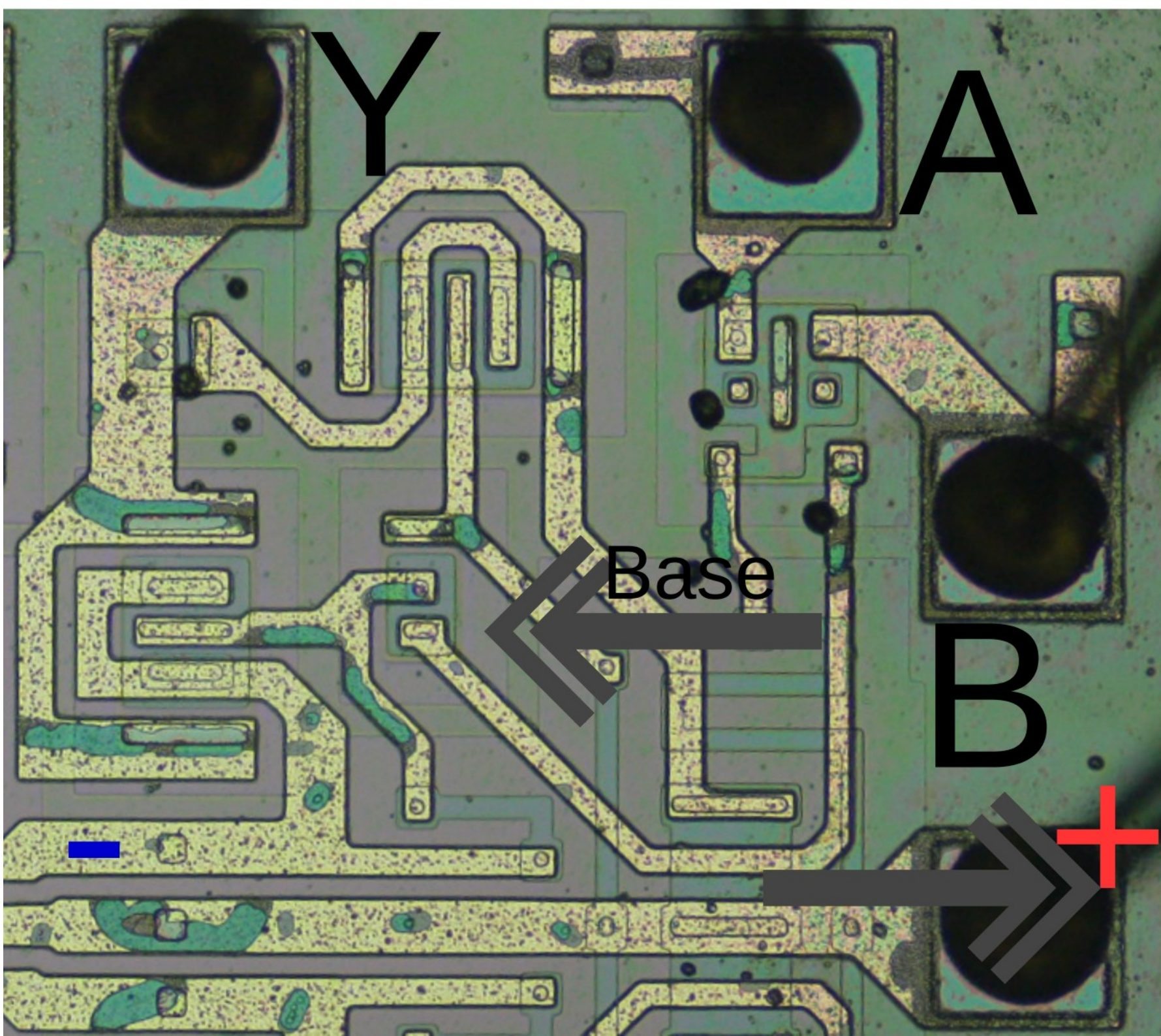
B

+

—

Tesla MH7400 – 4xNAND





Y

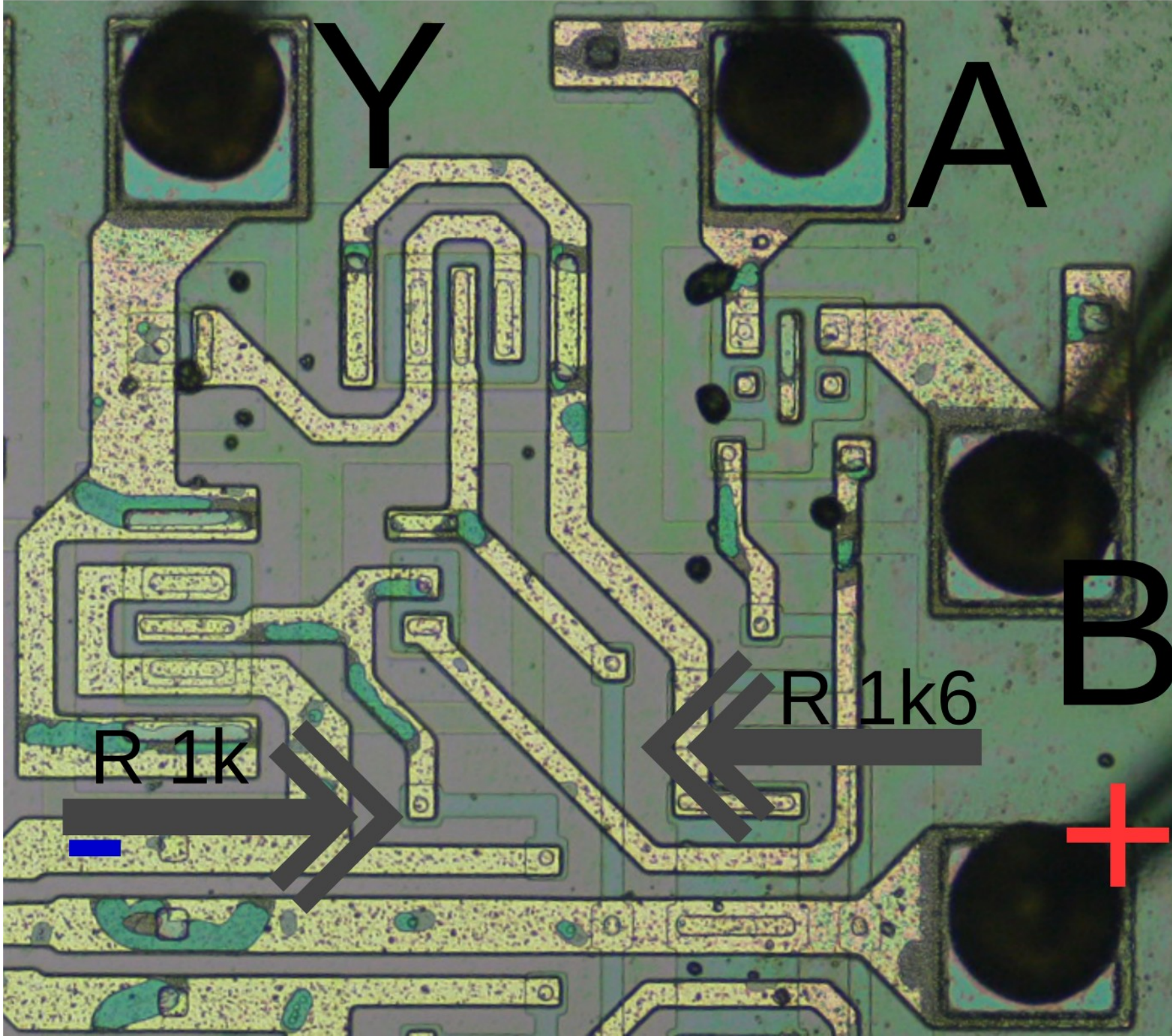
A

Base

B

-

+



Y

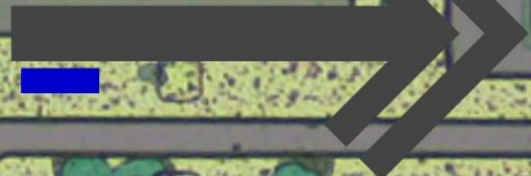
A

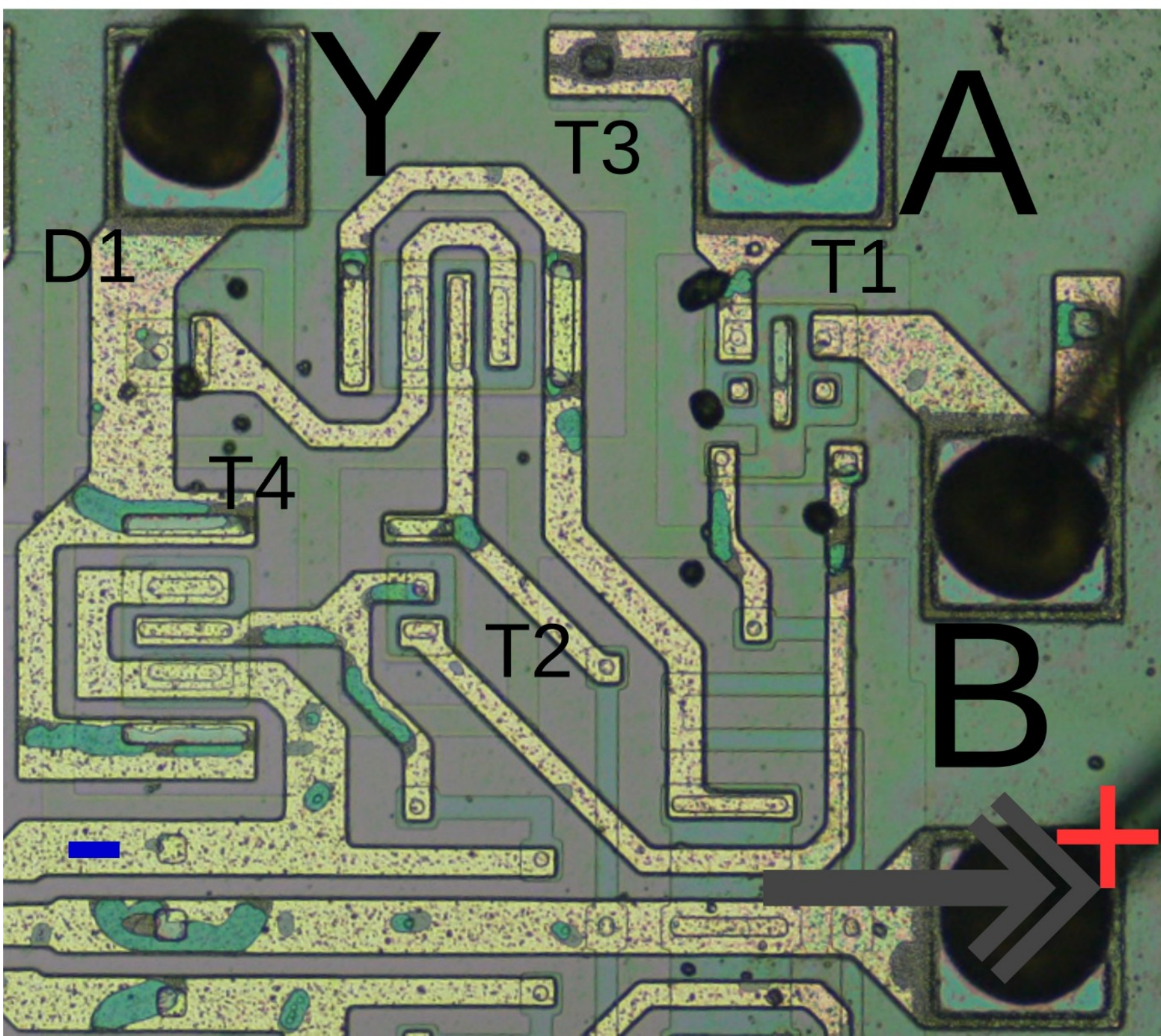
B

R 1k

R 1k6

+





Y

T3

A

D1

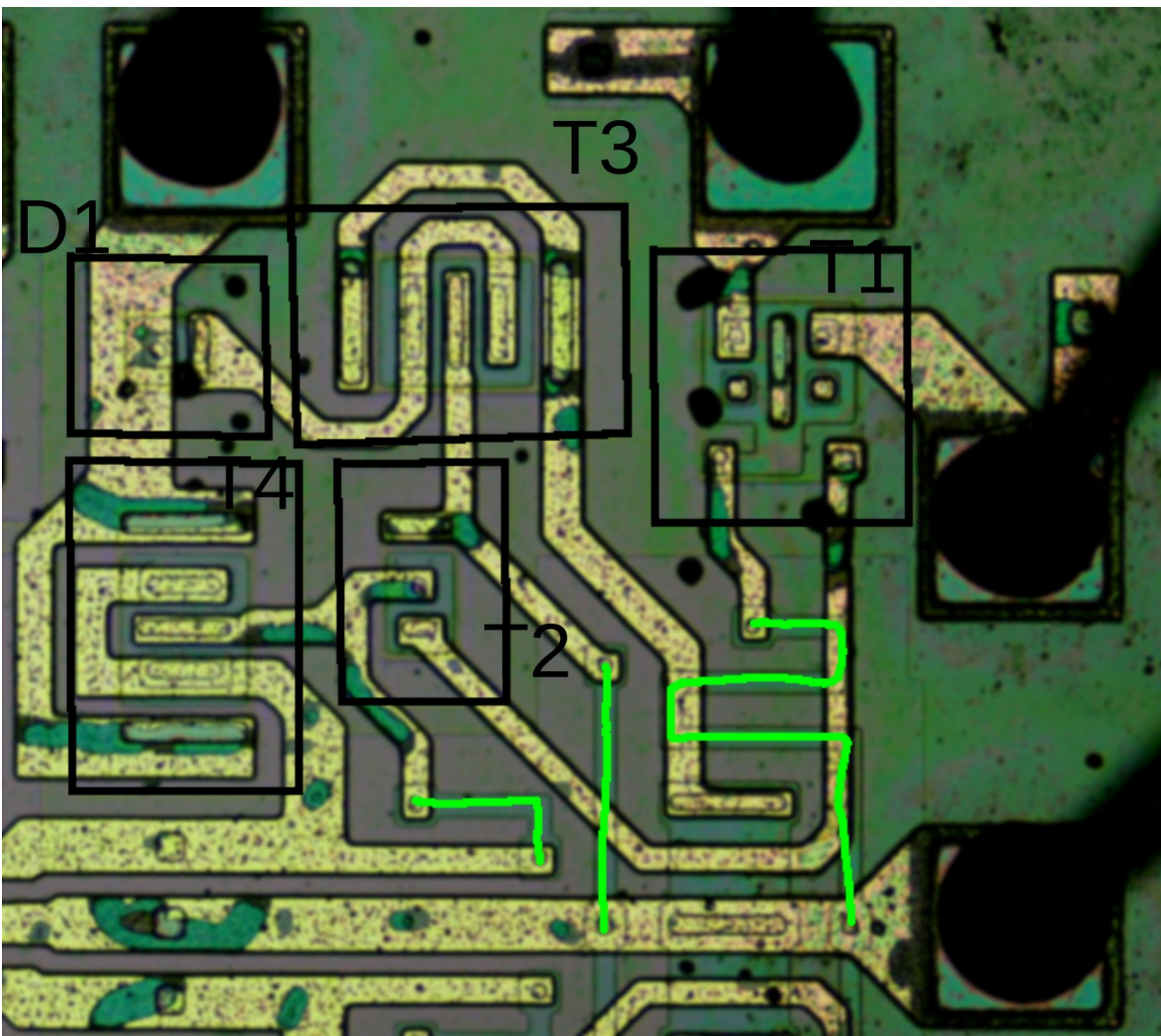
T1

T4

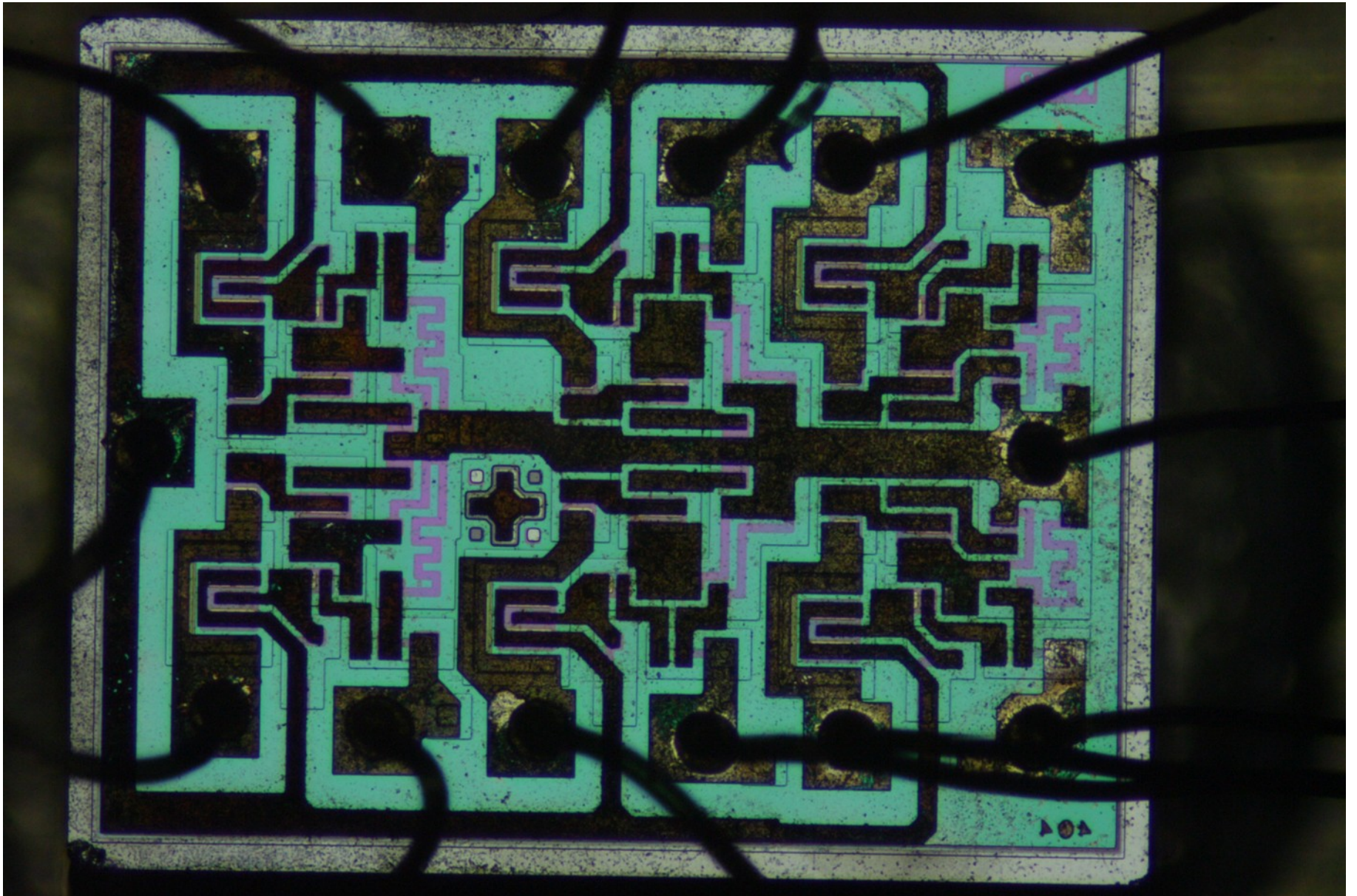
T2

B

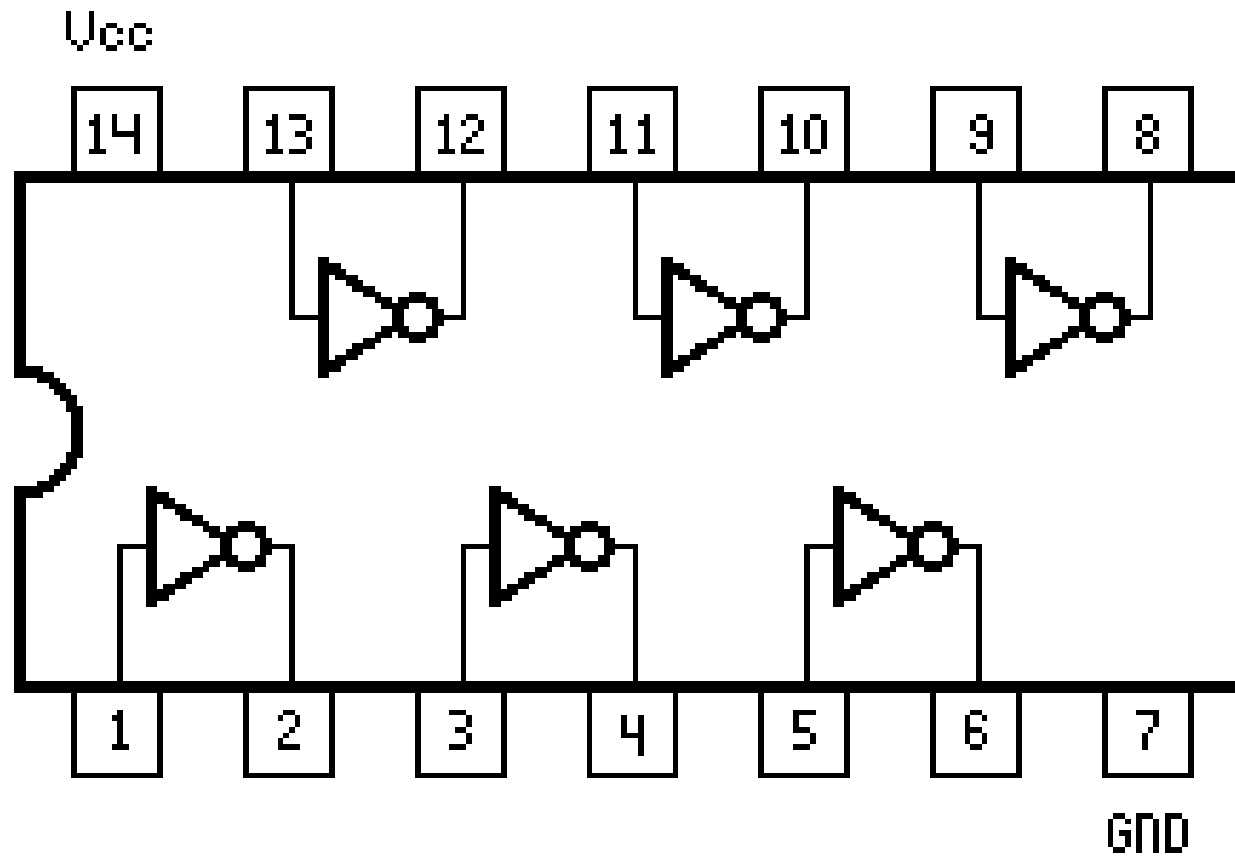


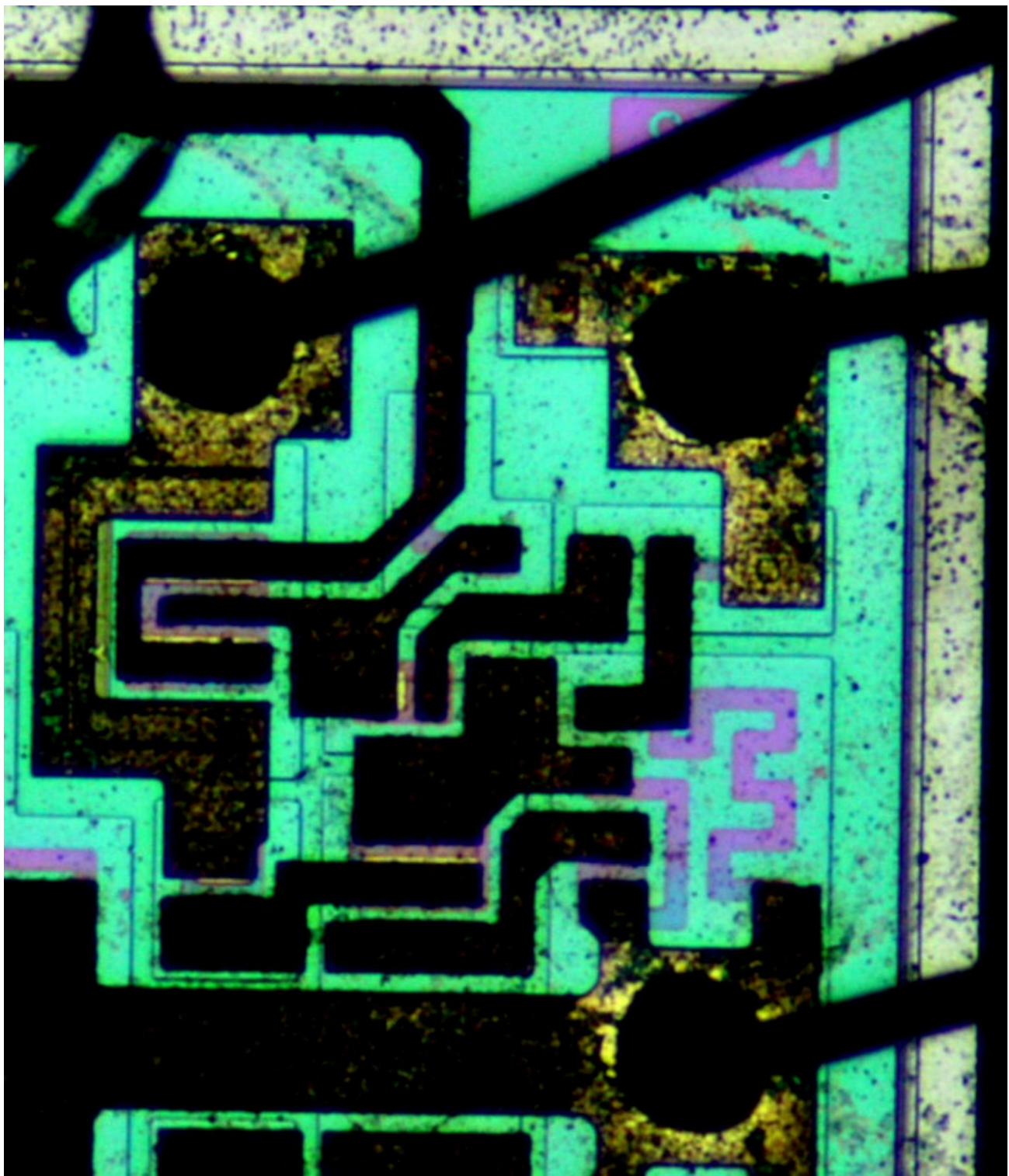


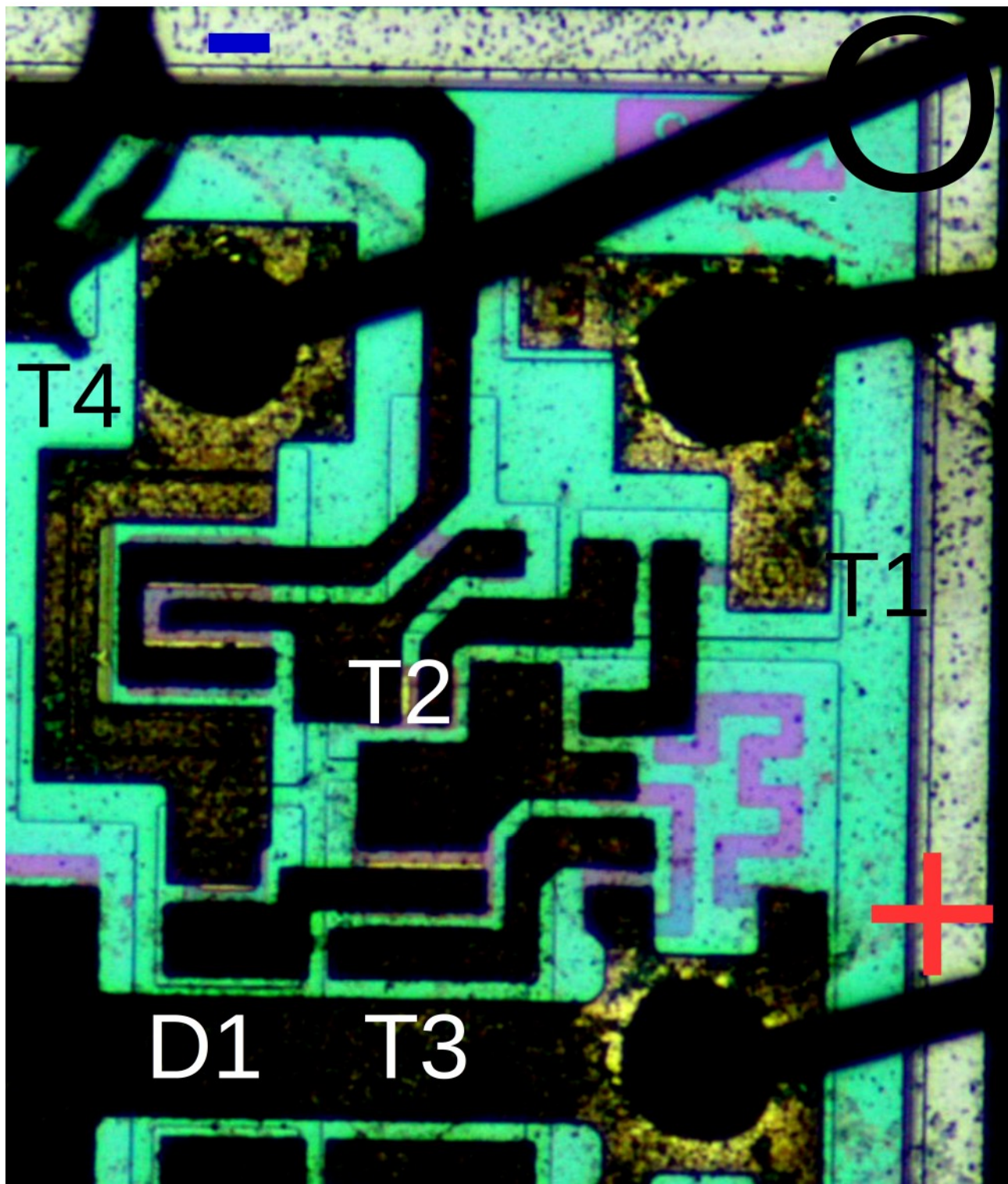
MH8404S – 6x NOT



7404 – 6x NOT







OUT
IN

T4

T1

T2

D1

T3



Dotazy?

Zdroje

- (1) <http://www.righto.com/2014/05/reverse-engineering-tl431-most-common.html>
- (2) <http://telefon.unas.cz/e/zaklad2.htm>
- (3) <http://ready64.it/articoli/leggi/idart/23/costruire-il-duplicator>
- (4) <http://www.teslakatalog.cz/MH7400.html>
- (5) <http://www.tutorsglobe.com/homework-help/electrical-engineering/ttl-logic-gate-series-74148.aspx>