Ad univerzitná formácia: Každý z nás je líder

- Veľmi sa to nenosí, ale

  každý z nás má zodpovednosť.

  Veľkú.

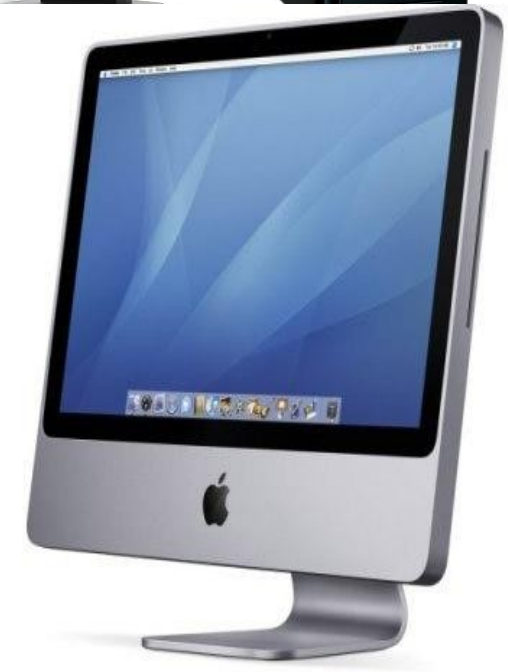
- https://www.youtube.com/watch?v=KHi2dxSf9hw

PRINCÍP::::: --> ZHORA dolu

- PC
  - komponenty
    - súčiastky
      - princípy
        - logický návrh
          - 1 a 0 :)
            - elektrické/optické signály (nie zelení mužíkovia s 1 a 0 na chrbte utekajúci v medennom/optickom drôtiku :)

?

SO, what‘s inside?



2.1. Úplne normálové formy

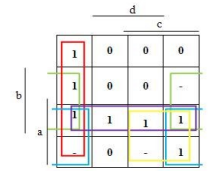
Z tabuľky (alebo mapy) sa dá jednoducho vyjadriť ÚDNF (úplná disjunktívna normálna forma) a ÚKNF (úplná konjunktívna normálna forma). ÚDNF aj ÚKNF sú vyjadrenia v algebrickom tvare, pričom pri ÚDNF nás zaujímajú hodnoty funkcie f rovné 1 a pri ÚKNF hodnoty funkcie f rovné 0. Do výsledného vyjadrenia môžeme zahrnúť aj neurčené body, teda hodnoty funkcie f rovné X (v nasledujúcich vyjadreniach sú podčiarknuté).

$$f_{\acute{U}DNF}(a,b,c,d) = \overline{a}\,\overline{b}\,\overline{c}\,\overline{d} + \overline{a}\,b\,\overline{c}\,\overline{d} + \underline{\overline{a}\,b\,c\,\overline{d}} + a\,b\,\overline{c}\,\overline{d} + a\,b\,\overline{c}\,d + a\,b\,c\,\overline{d} + \underline{a\,\overline{b}\,\overline{c}\,\overline{d}} + a\,\overline{b}\,c\,d + a\,\overline{b}\,c\,\overline{d}$$

$$f_{\acute{U}KNF}(a,b,c,d) = (a+b+c+\overline{d})(a+b+\overline{c}+\overline{d})(a+b+\overline{c}+d)(a+\overline{b}+c+\overline{d})$$
$$(a+\overline{b}+\overline{c}+\overline{d})(a+\overline{b}+\overline{c}+d)\underline{(\overline{a}+b+c+d)}\underline{(\overline{a}+b+c+\overline{d})}(\overline{a}+b+c+\overline{d})$$

2.2. Skrátené normálové formy

Pomocou Karnaughovej mapy hľadáme pokrytie jednotkových bodov (pri SDNF) resp. nulových bodov (pri SKNF) pomocou maximálne pravidelných konfigurácií (2^n). Tým získame rozklad danej funkcie na súčet implikantov, resp. súčin implicentov, ktoré určujú SDNF, resp. SKNF danej funkcie.



$$f_{SDNF}(a,b,c,d) = \overline{c}\,\overline{d} + b\,\overline{d} + a\,\overline{d} + a\,b + a\,c$$

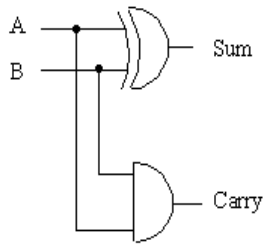
Binary adder

Example of digital logic circuits in computers

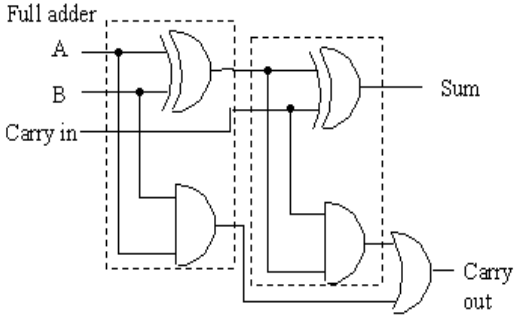
The output from a binary adder performs base 2 arithmetic using logic inputs

Half adder

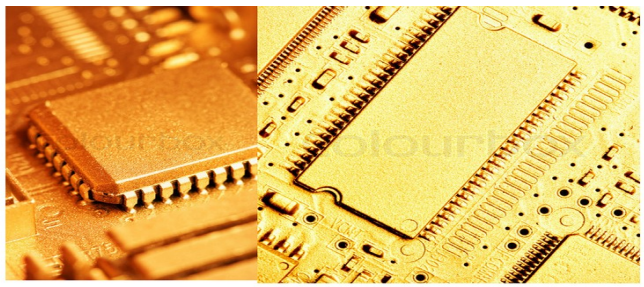
A	B	S	C
0	0	0	0
0	1	1	0
1	0	1	0
1	1	0	1

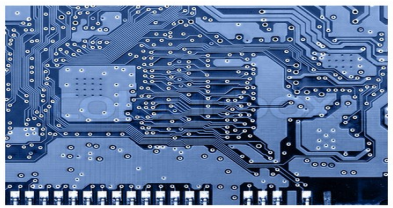


Full adder



The half adder only sums two inputs and ignores any carry bit from any previous summations. The full adder includes any carry bits from previous operations and thus may be used in a chain to perform binary arithmetic.



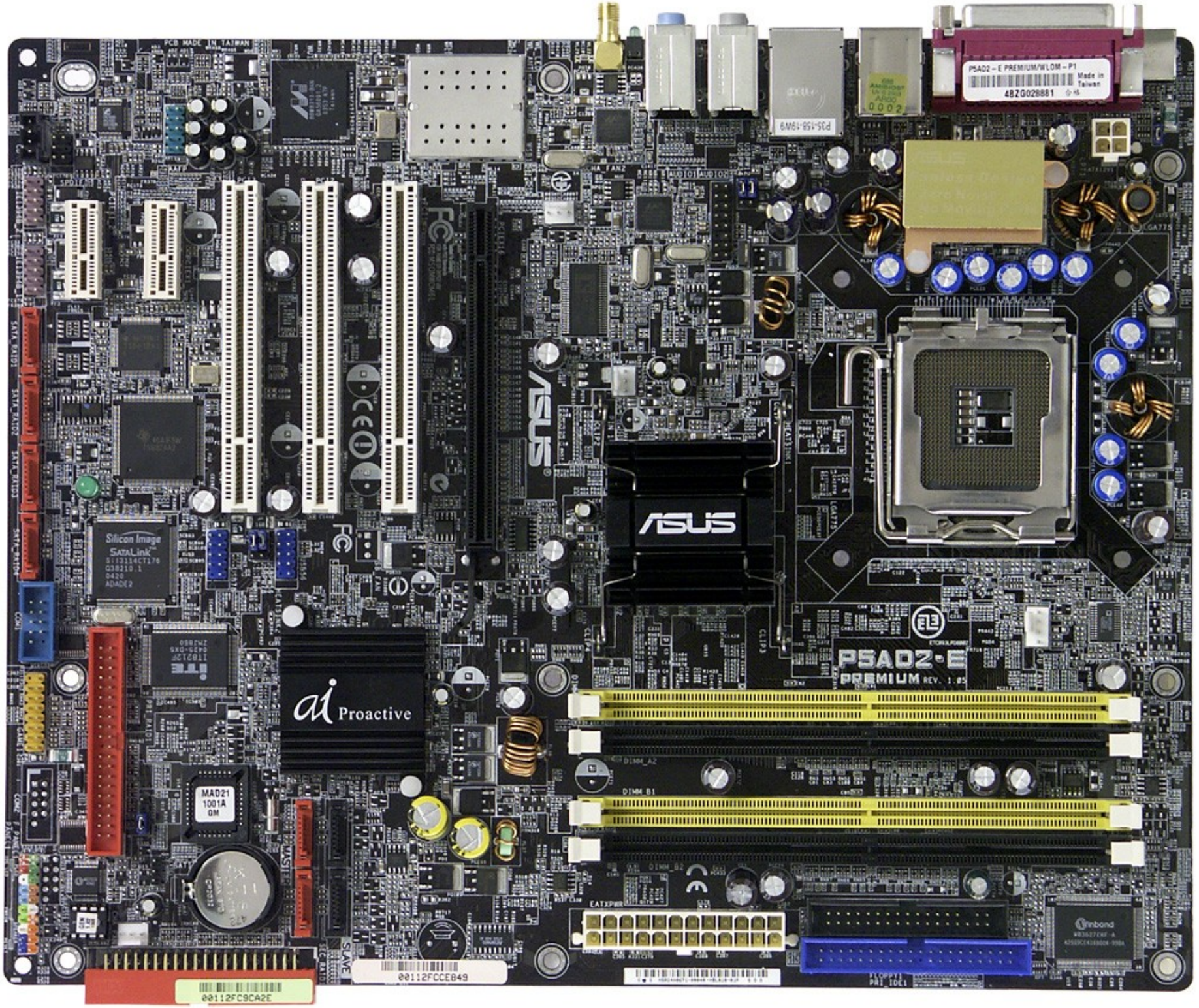


?

Základná doska

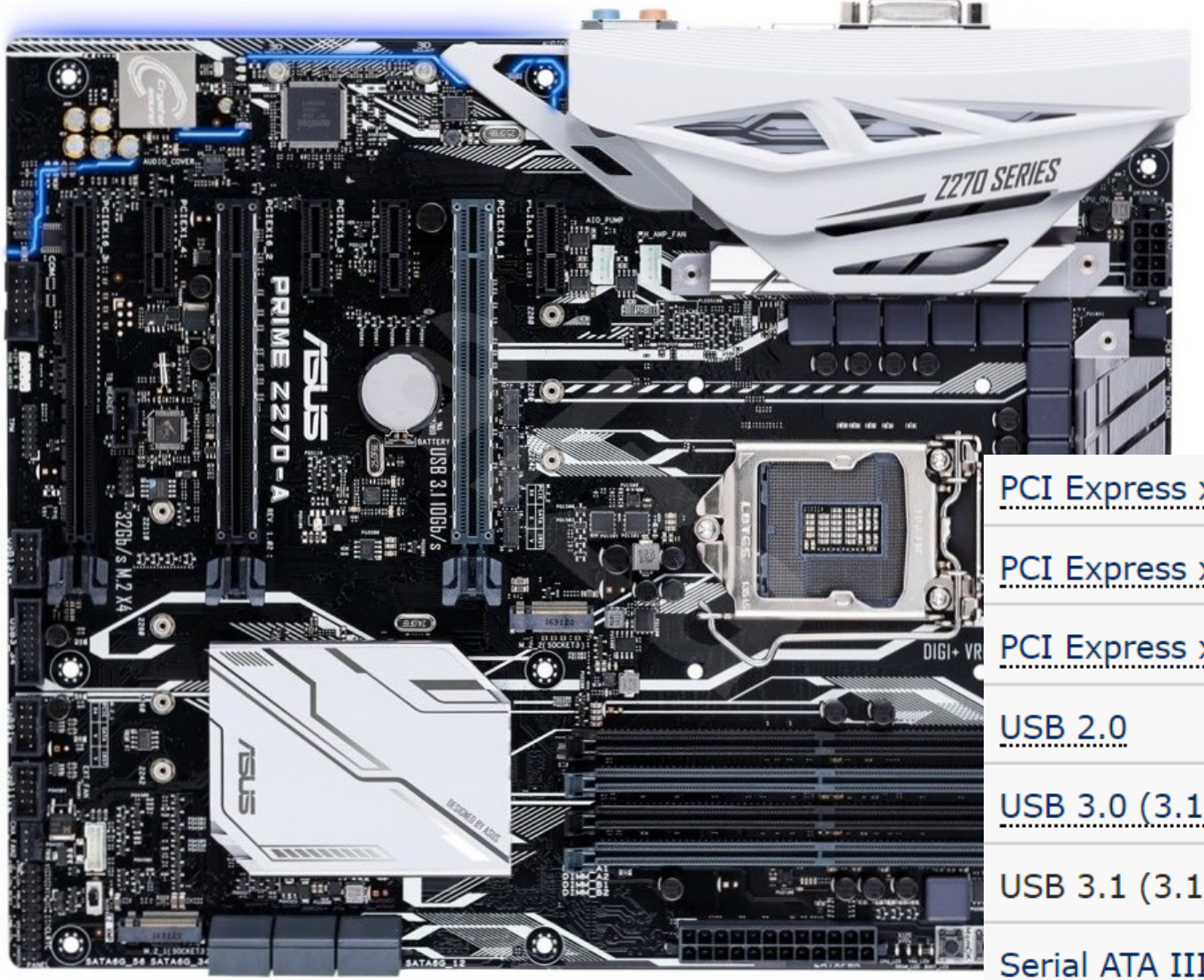
- Má formát
  - ATX
  - Micro-ATX
  - Mini-ITX
- definuje
  - Výkonové možnosti PC
  - Možnosti rozšíriteľnosti PC
  - Konektivitu PC
  - Typ procesora a RAM, kt. je možné použiť
  - Možnosti pretaktovania


115


PCB MADE IN TAIWAN
P5AD2 – E PREMIUM/WLOM – P1
4BZG028881
Made in Taiwan
ASUS
P5AD2-E
PREMIUM REV. 1.05
ai Proactive
Silicon Image
SATALink
MAD21
1001A
GM
Winbond
00112FCCE849
00112FC9CA2E


1394
eSATA
SPDIF OUT


SmartMedia
MMC / SD
MS/MS PRO
CompactFlash I/II

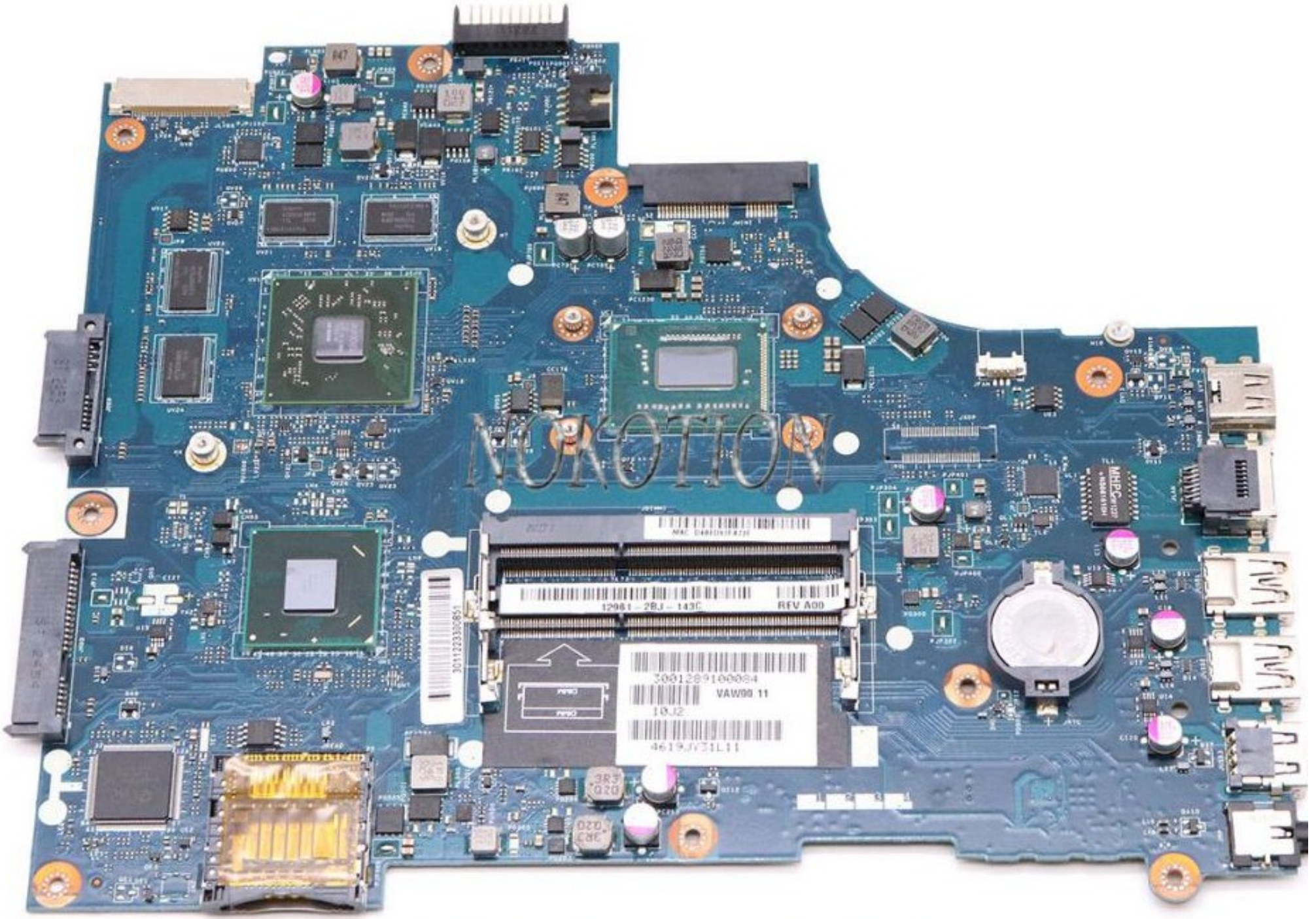


PCI Express x16	1×
PCI Express x8	1×
PCI Express x1	4×
USB 2.0	6×
USB 3.0 (3.1 gen1)	6×
USB 3.1 (3.1 gen2)	2 ×
Serial ATA III	6×

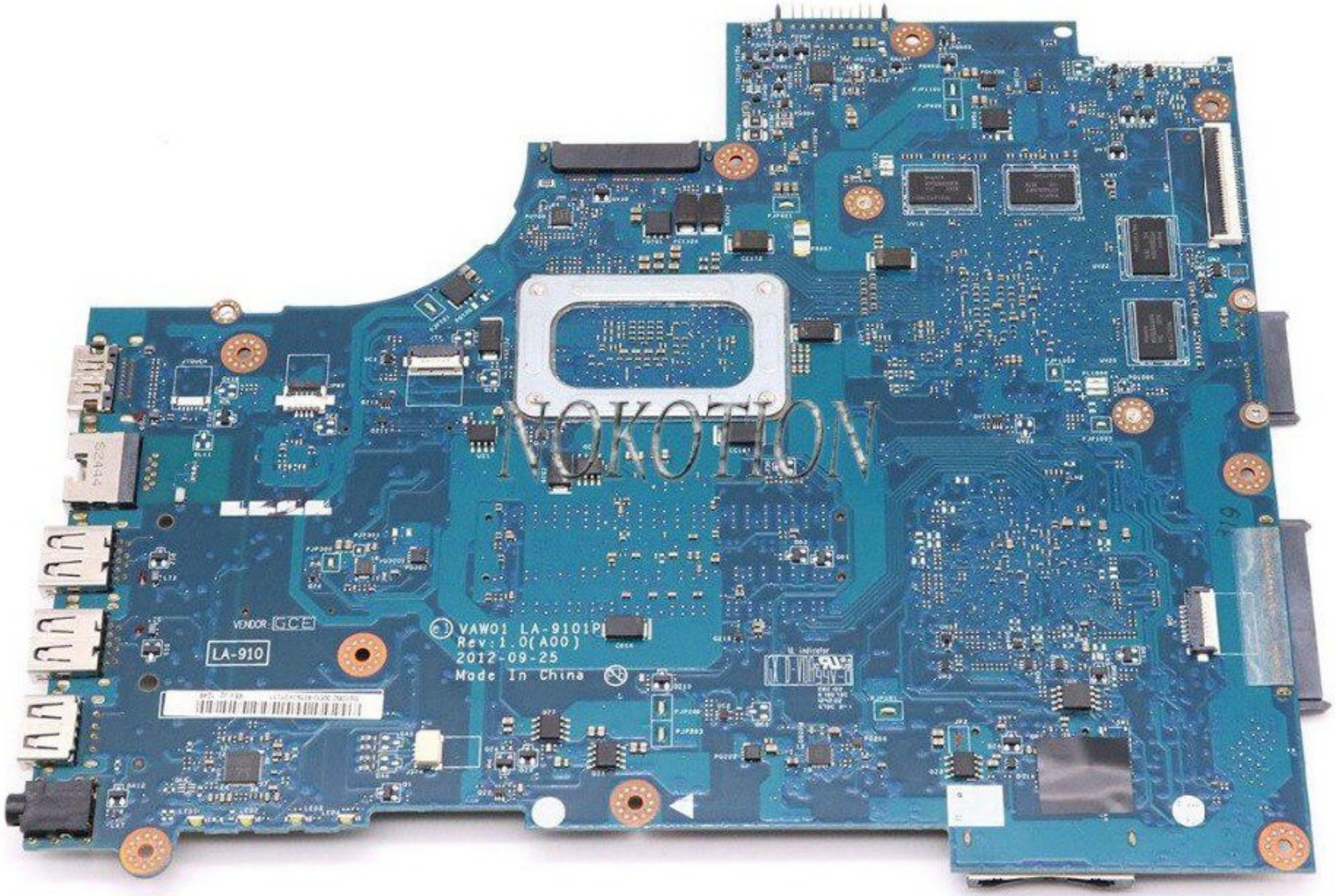
Integrovaná sieťová karta, Integrovaná zvuková karta, PCI Express 3.0, Jednoduché pretaktovanie, Serial ATA III, UEFI BIOS, USB 3.0, Podpora Intel Optane

DVI, HDMI, Jack, PS/2, USB 3.0 (3.1 gen1), USB 3.1 (3.1 gen2), USB-C, RJ-45 (LAN), DisplayPort

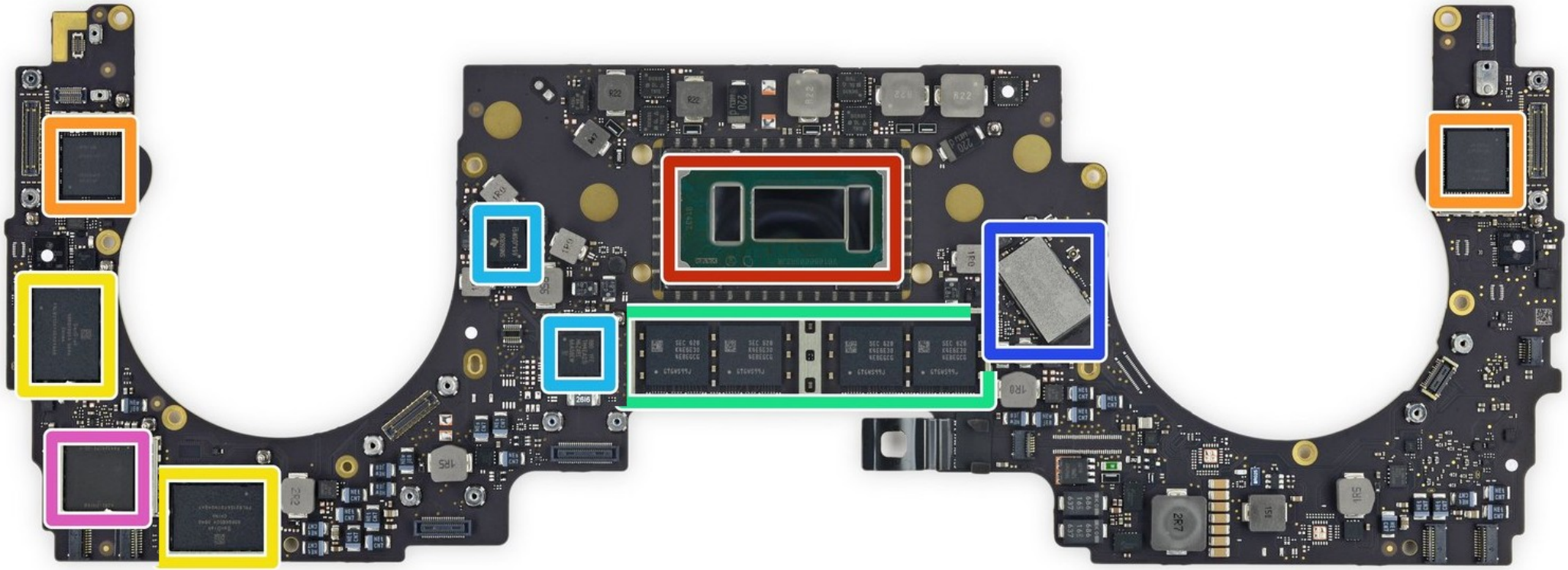
USB 2.0 bracket, USB 3.0 (3.1 gen1) bracket, Serial ATA III, S/PDIF bracket, TPM, Thunderbolt, M.2 Socket



SR0XL I5-3337U


VENDOR: GCE
LA-910
VAW01 LA-9101P
Rev:1.0(A00)
2012-09-25
Made In China

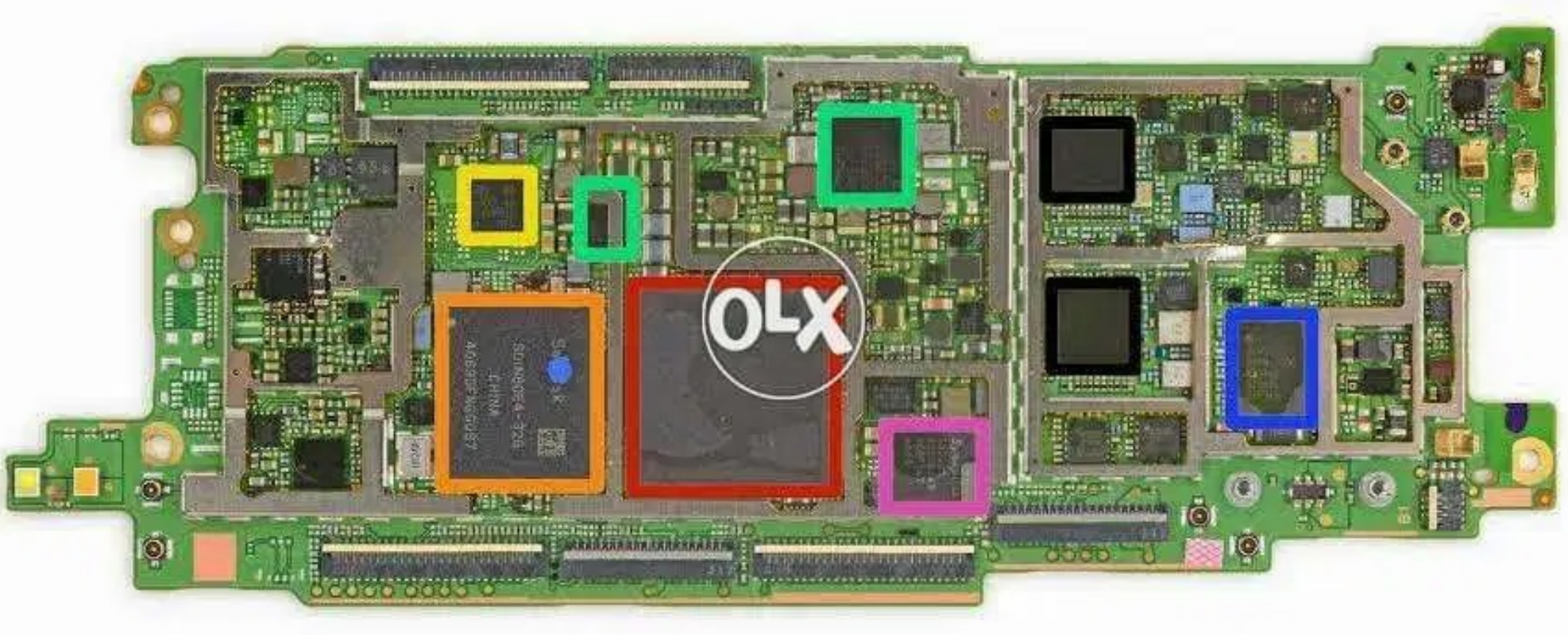
MacBook Pro 13" 2016



- We now look at the ~~moustache~~ logic board to see what chips make this MacBook a Pro:
  - Intel Core i5-6267U processor with Intel Iris Graphics 550
  - Intel JHL6540 Thunderbolt 3 controller
  - SanDisk SDRQKBDC4 064G 64 GB NAND flash memory (x2 for a total of 128 GB)
  - Samsung K4E6E304EB-EGCE DDR3 DRAM (4 x 2 GB for 8 GB total)
  - Texas Instruments SN650839 66AL7XWGI, and TI/Stellaris LM4FS1EH SMC Controller (Replacement codename for TM4EA231)
  - Murata/Apple 339S00056 Wi-Fi Module
  - R4432ACPE-GD-F

https://www.ifixit.com/Teardown/MacBook+Pro+13-Inch+Touch+Bar+Teardown/73480

Miniaturizácia pokračuje



HTC M8 (https://www.olx.com.pk/item/htc-m8-board-iid-857320389/gallery)

Standard ATX

(12" x 9.6")

Micro-ATX

(9.6" x 9.6")

Mini-ITX

(6.7" x 6.7")

PC zdroj

PC zdroj

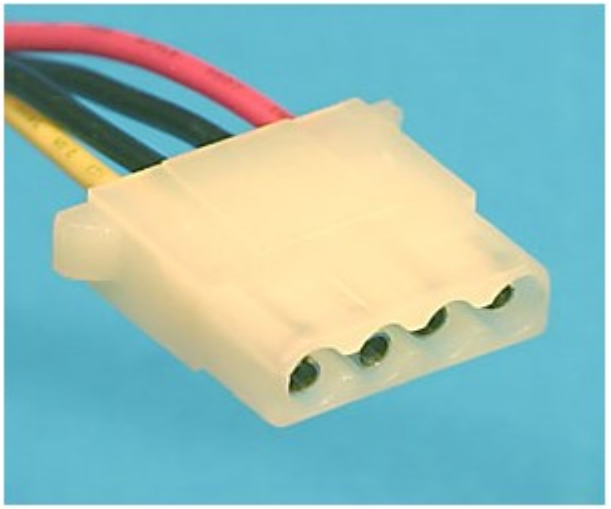
- „konvertor“ energie
  - striedavú 230V na jednosmernú (3.3, 5, 12V)

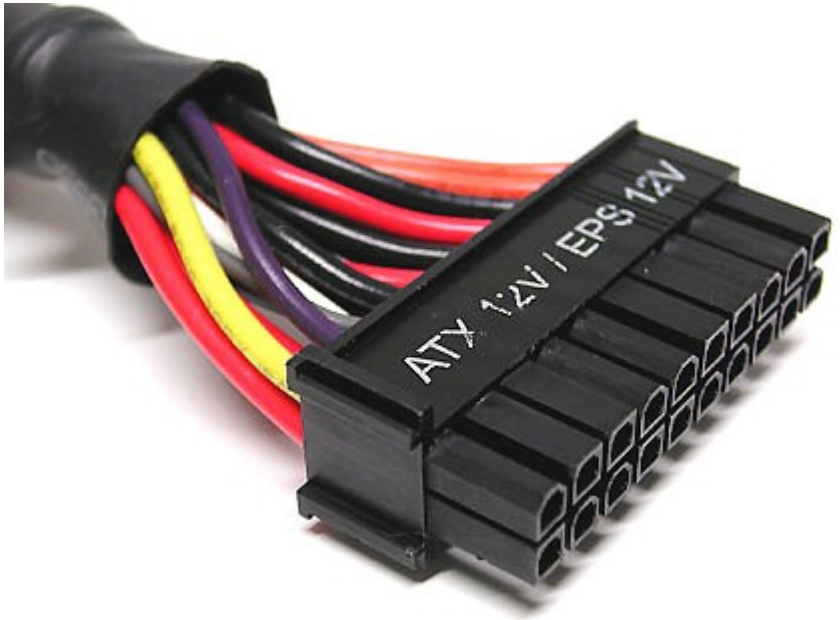
Notebookový zdroj

- Dodáva jeden druh napätia, napr. 19V

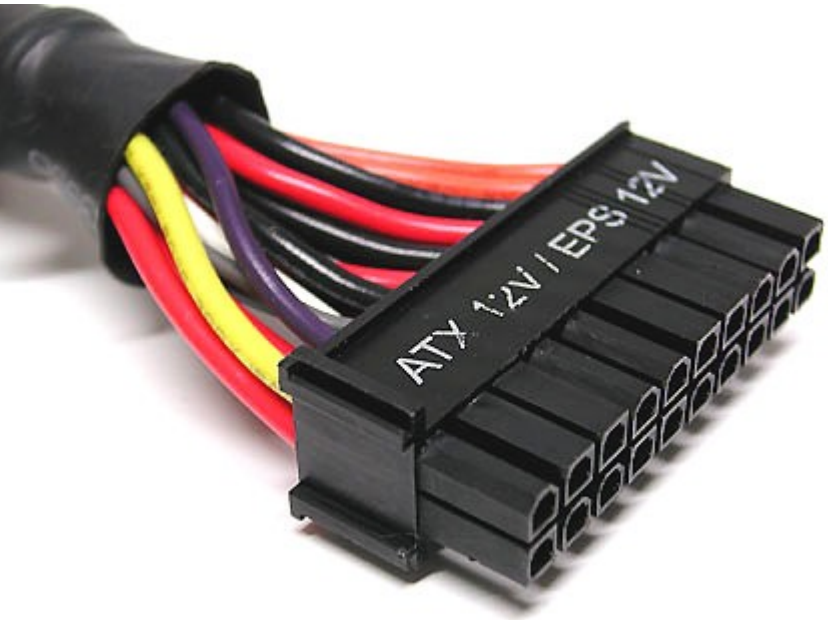
farbičky

- žltý +12 V
- čierny zem
- červený +5 V
- oranžový +3,3 V





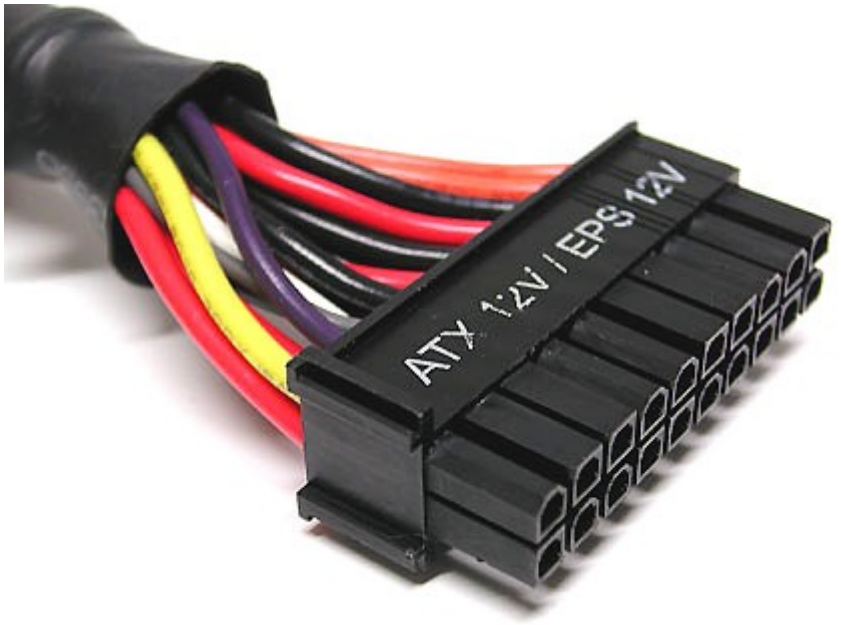
Napájací konektor



Pinout					
Pins 1 through 10			Pins 11 through 20		
Description	Wire color	Pin number	Pin number	Wire color	Description
+3.3 volts	orange	1	11	orange	+3.3 volts
+3.3 volts	orange	2	12	blue	-12 volts
ground	black	3	13	black	ground
+5 volts	red	4	14	green	PS_ON#
ground	black	5	15	black	ground
+5 volts	red	6	16	black	ground
ground	black	7	17	black	ground
PWR_OK	gray	8	18	white	-5 volts (optional)
VSB +5 volts	purple	9	19	red	+5 volts
+12 volts	yellow	10	20	red	+5 volts

Pre zaujímavosť

500W zdroj napája zákl.dosku cez konektor,
kt. má



7x zem

3x 3.3v = 9.9 V

6x 5v = 30 V

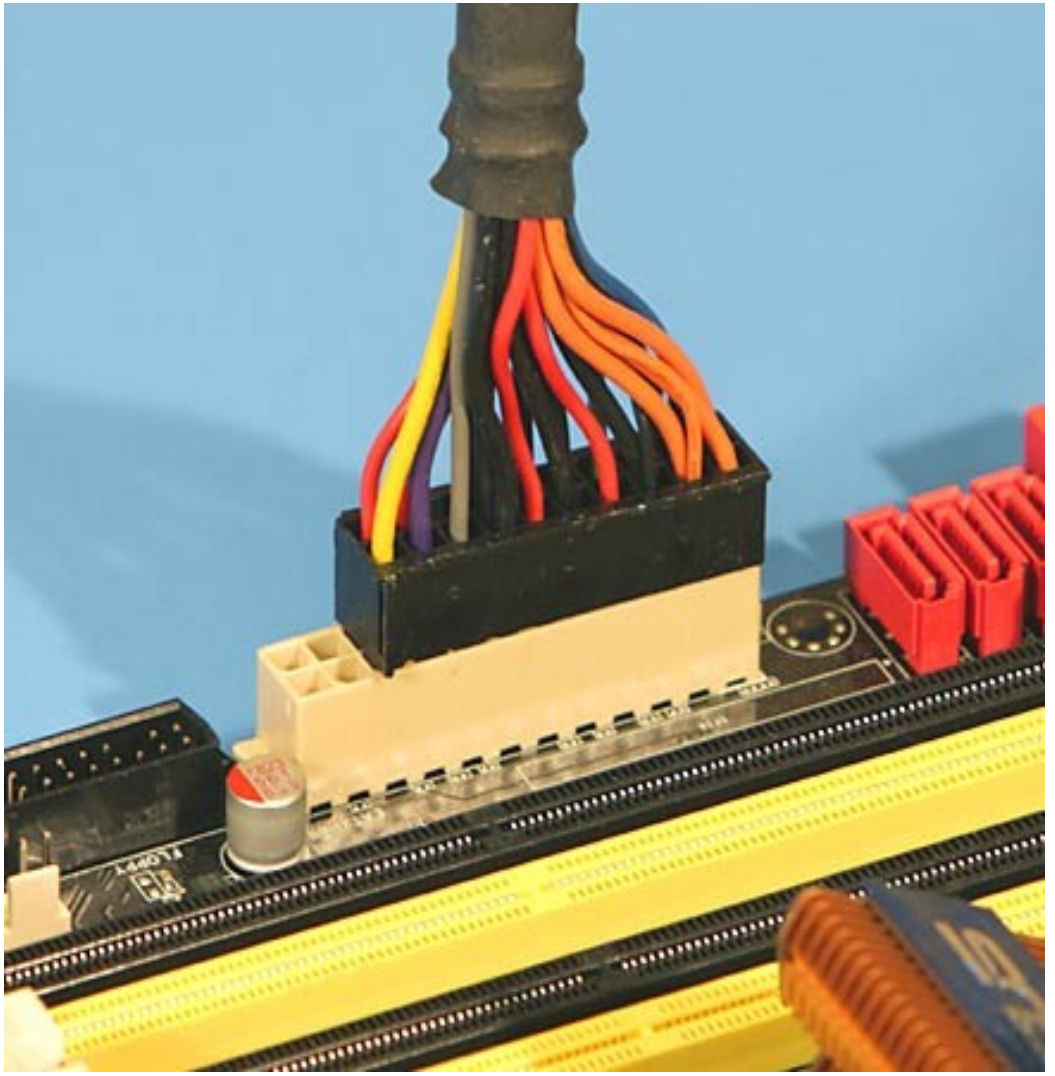
2x 12v = 24 V

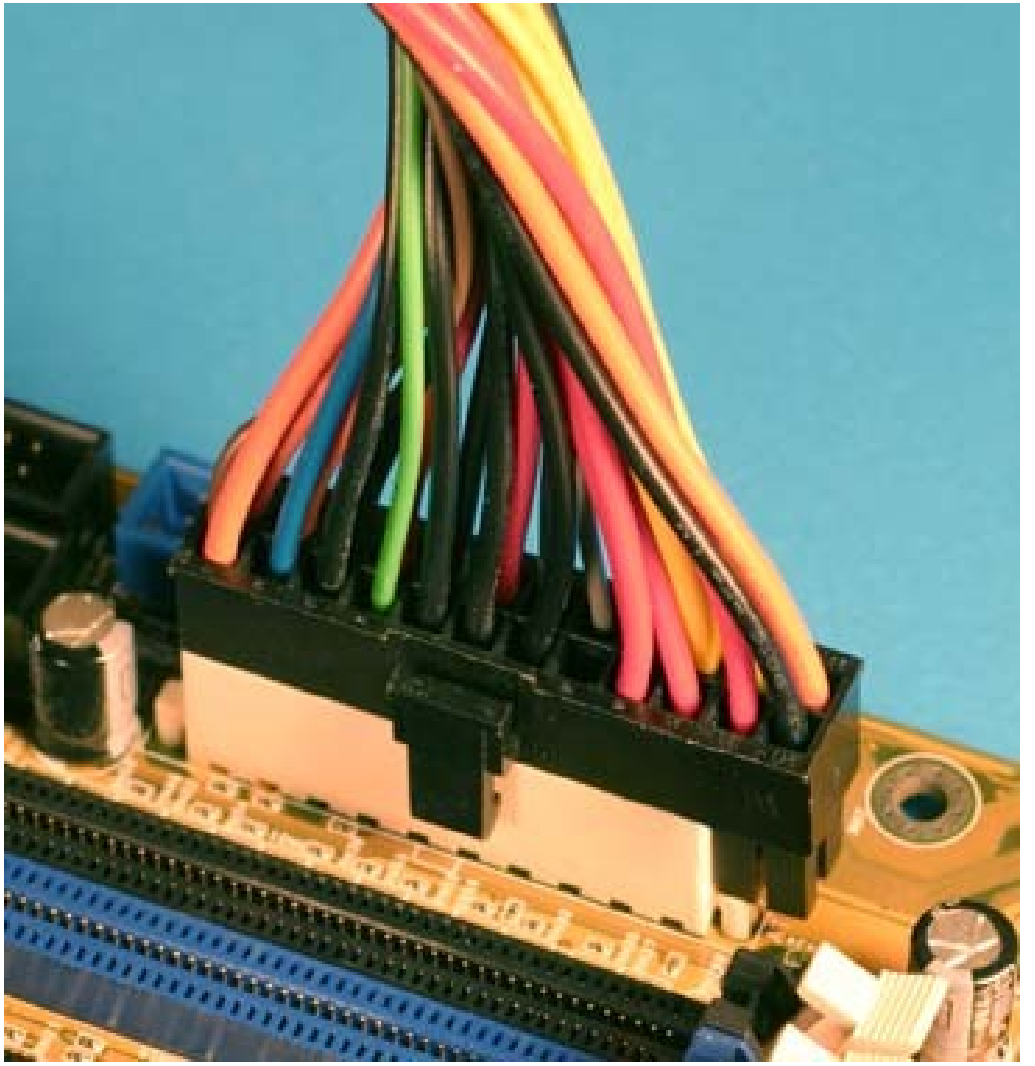
500W / 7 zem vodičov = 71 W na 1 zem vodič

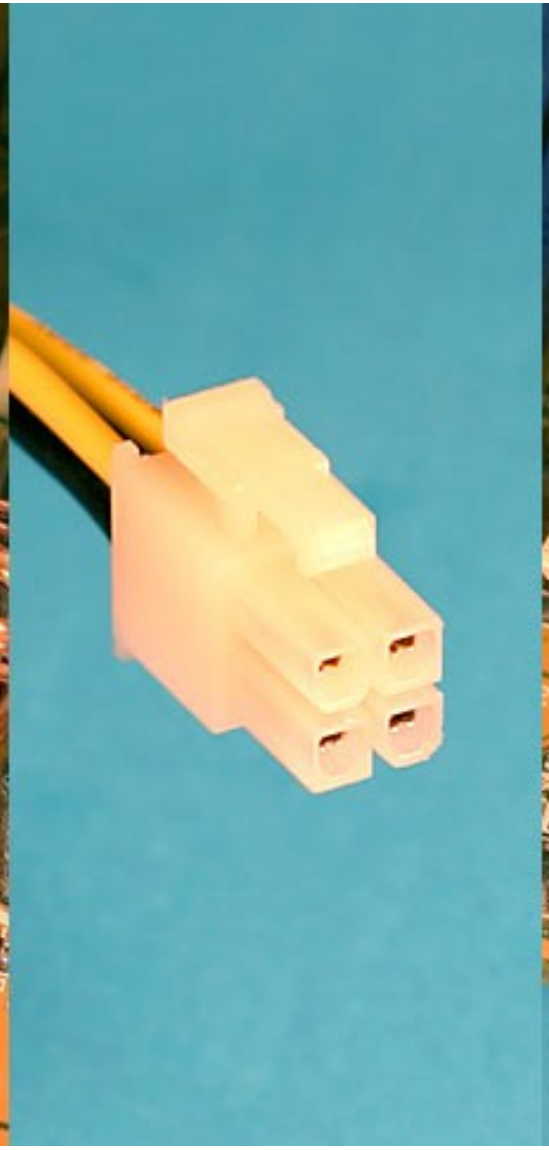
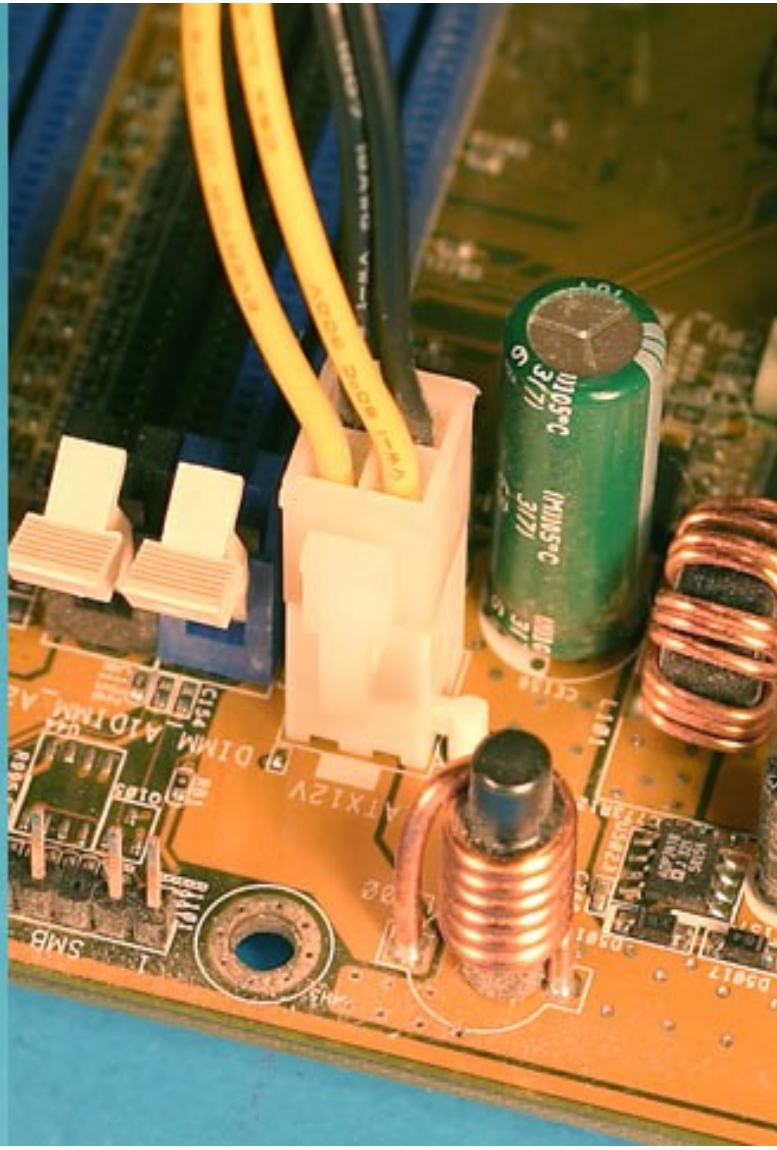
pri priemernom napätí 5.8V týmto vodičom potečie prúd 71 / 5.8 = 12.24 A

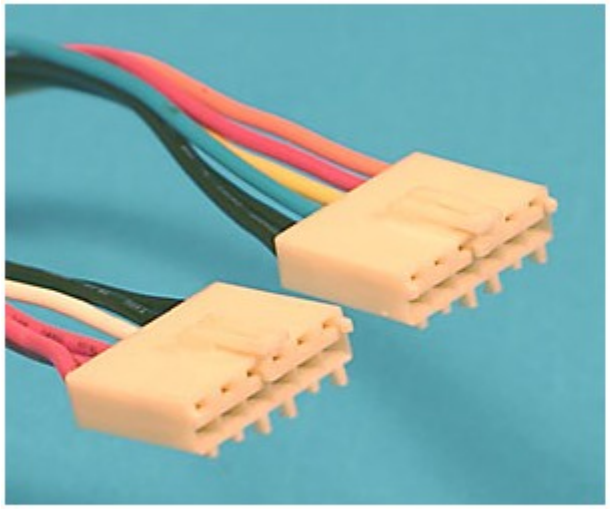
(preto sú také hrubé)

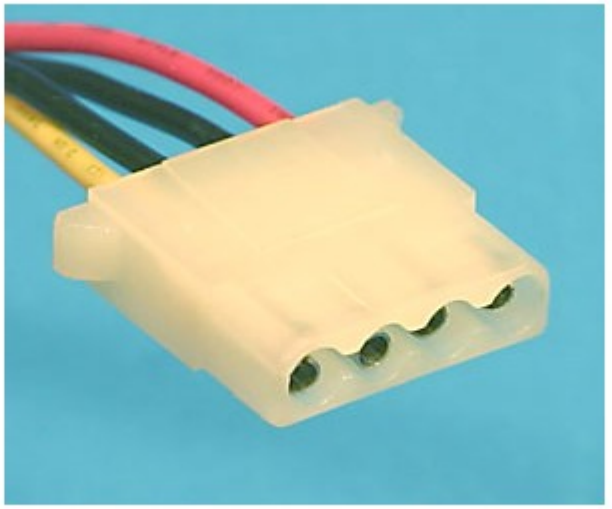
20 vs 24 pinov

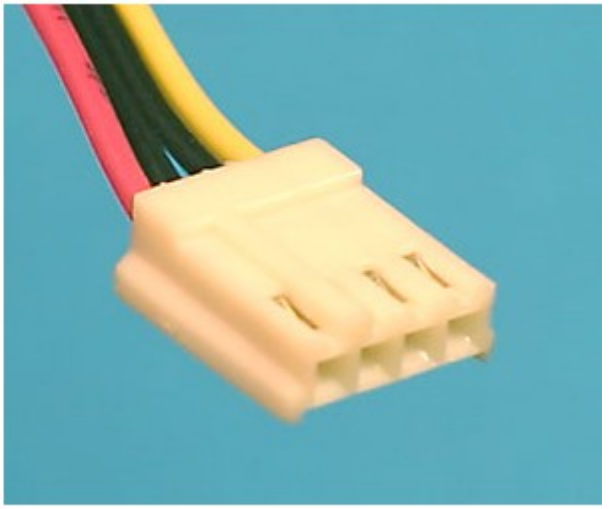


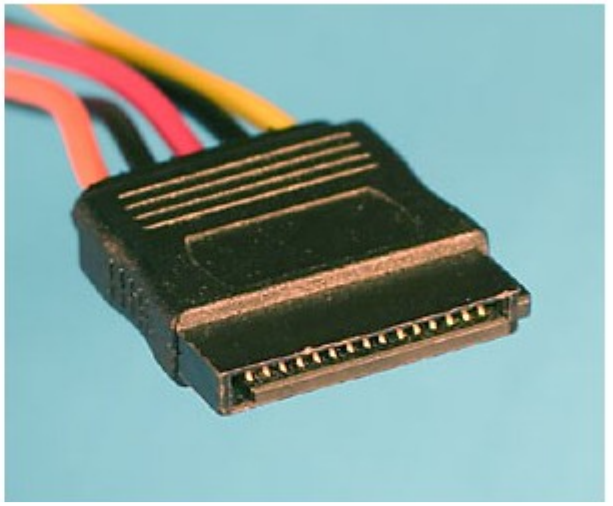


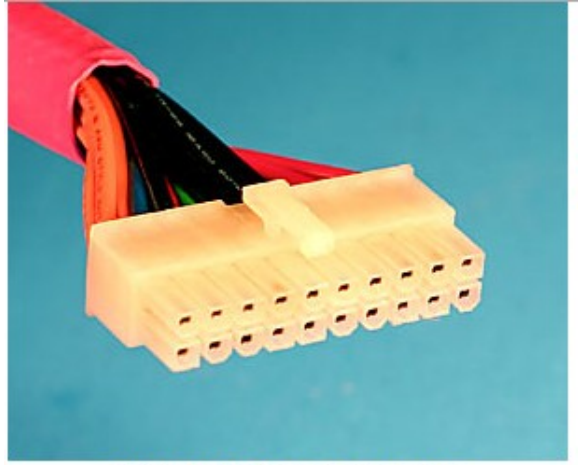






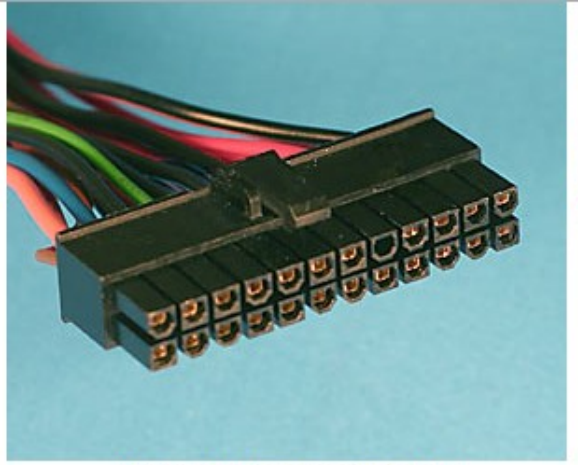




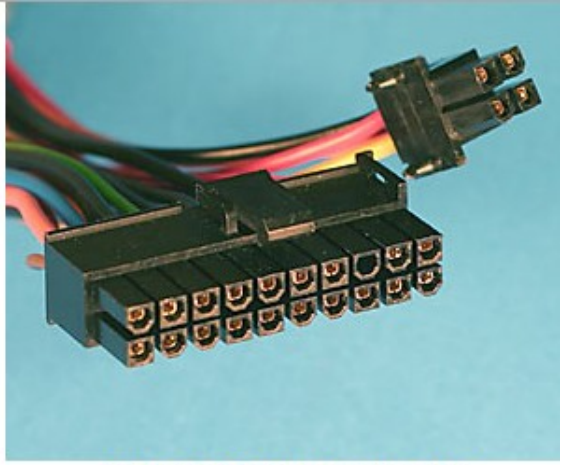




20 pin ATX main power cable

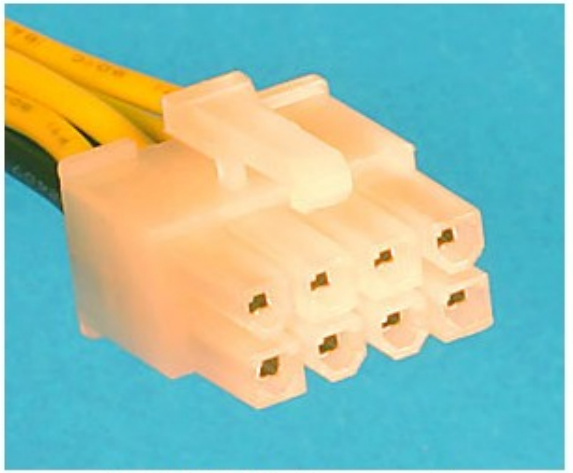


24 pin ATX main power cable

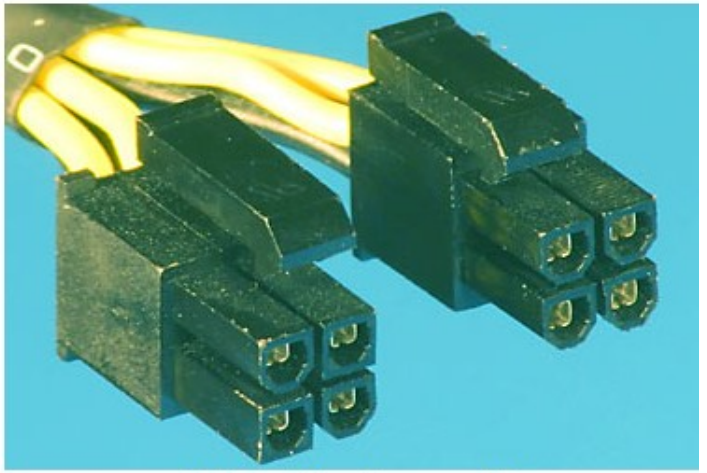


20+4 pin ATX main power cable

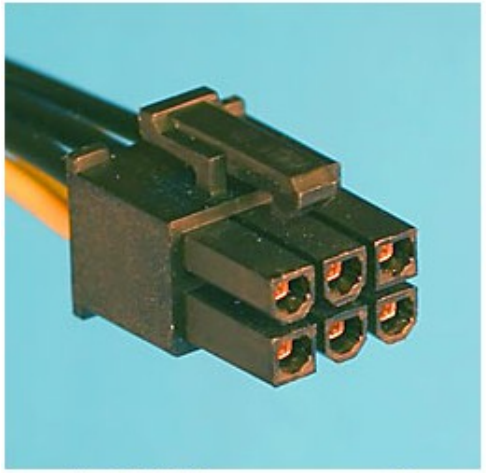
4 pin ATX +12 volt power cable



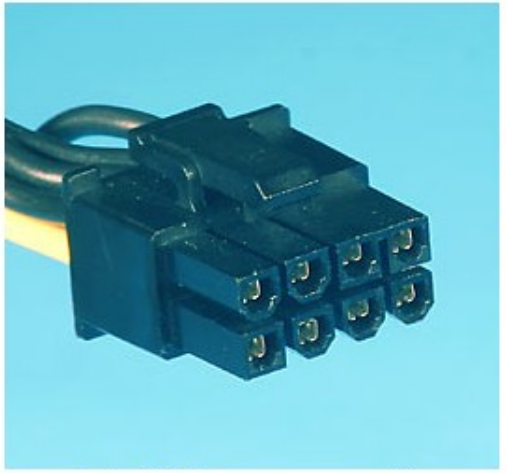
8 pin EPS +12 volt power cable



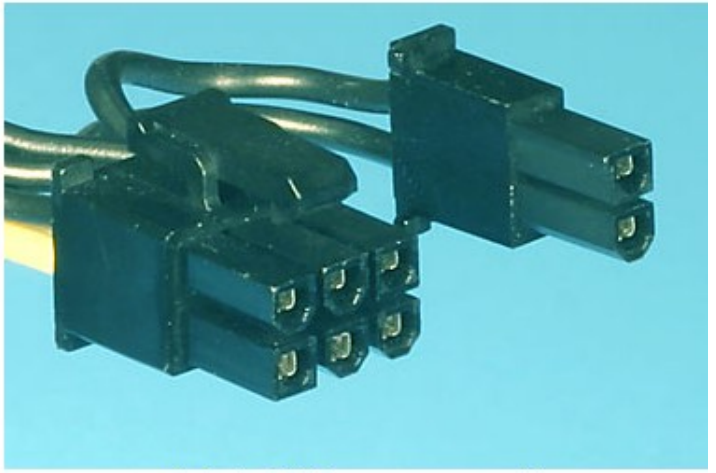
4+4 pin +12 volt power cable



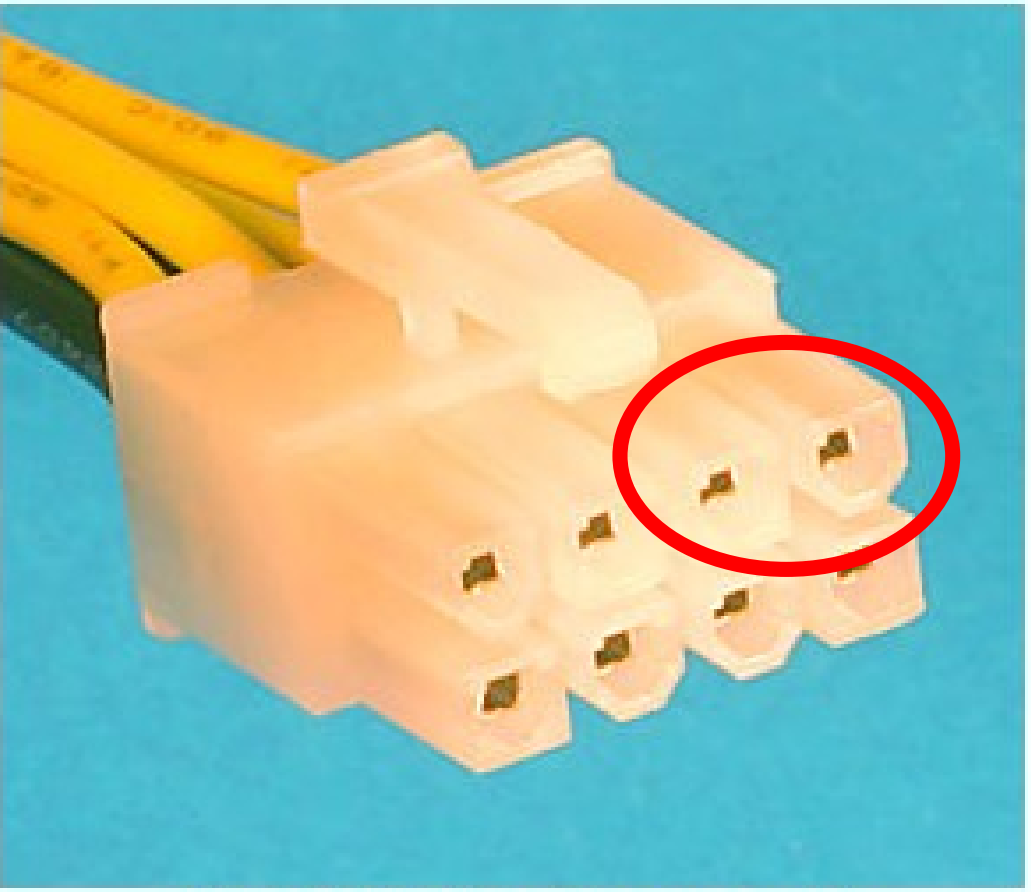
6 pin PCI Express power cable



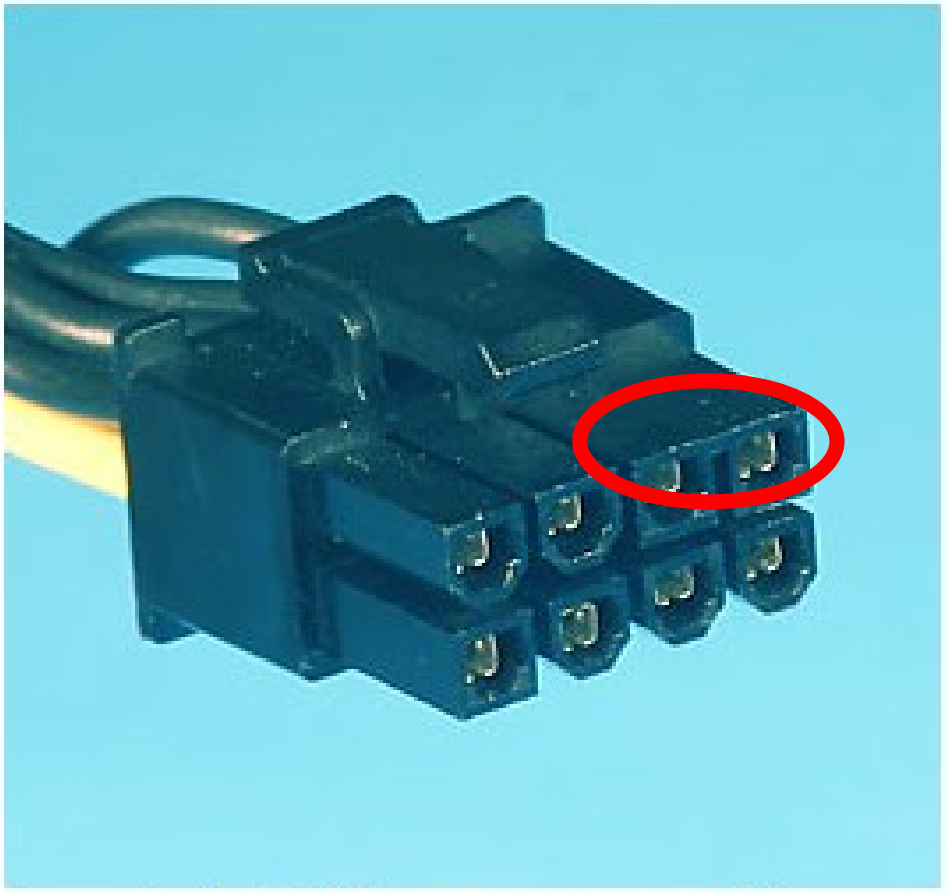
8 pin PCI Express power cable



6+2 pin PCI Express power cable

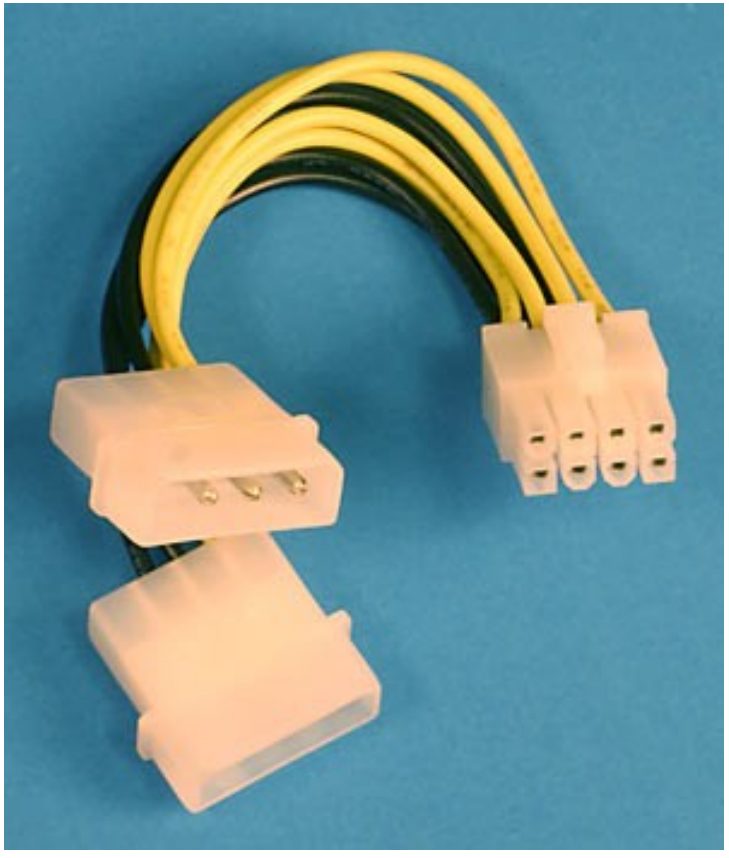


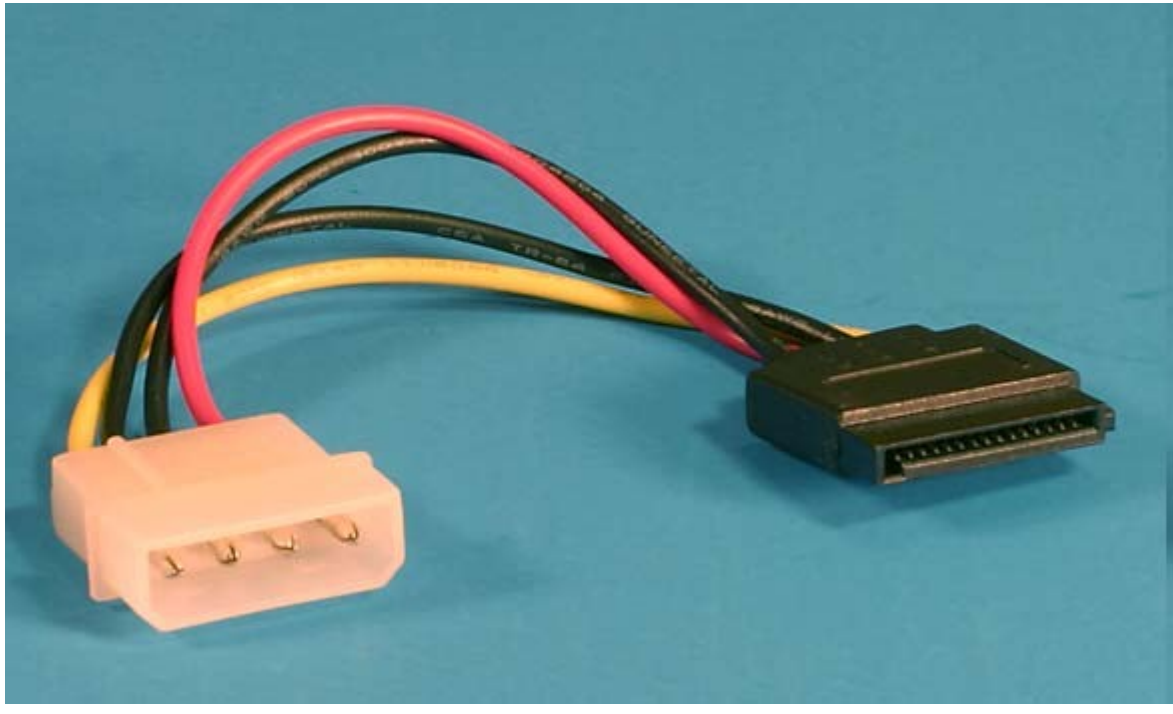
8 pin EPS +12 volt power cable

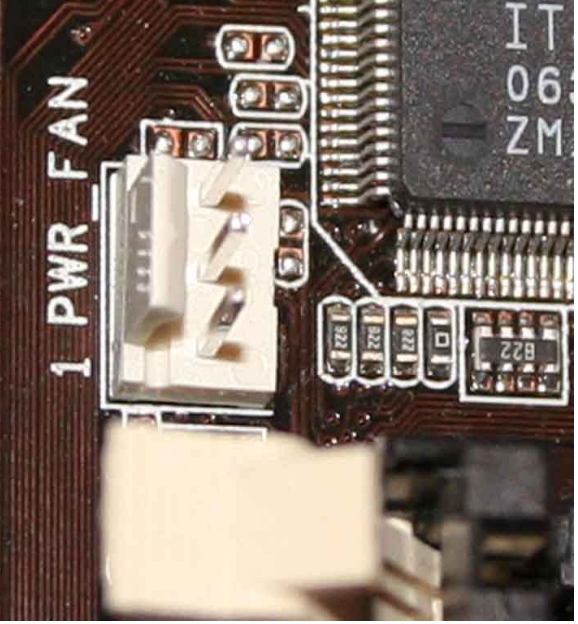


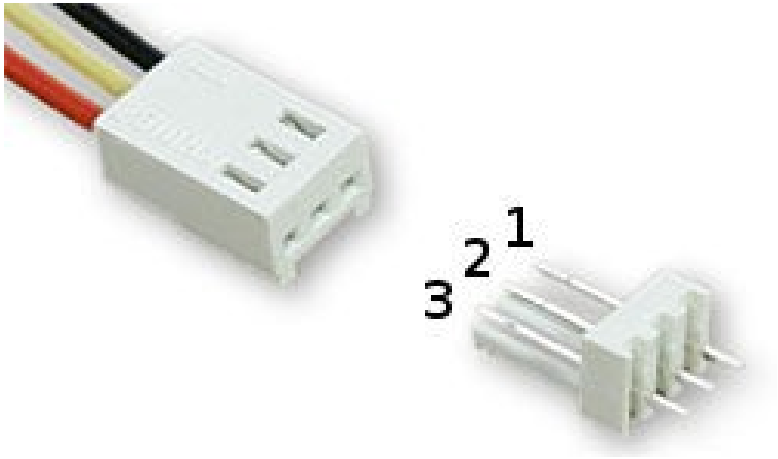
8 pin PCI Express power cable

PCI Express vs. napájací konektor MB

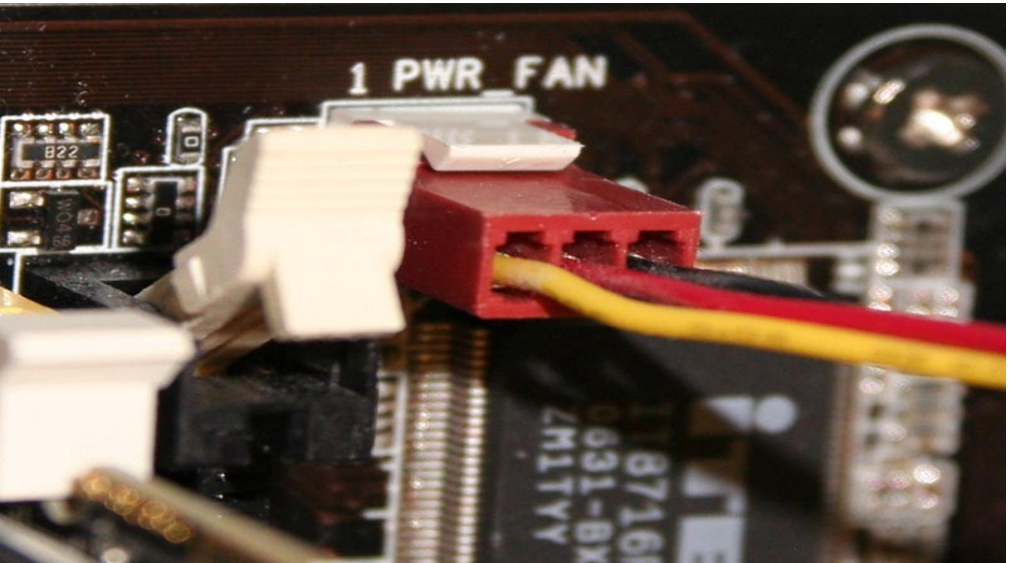






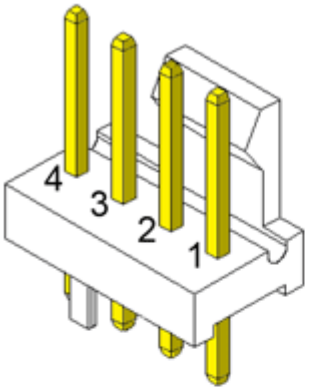


Pin	Name
1	GND
2	+12VDC or +5VDC
3	Tachometric Signal



Connector pinout for: Motherboard (CPU) 4 Pin Fan

4-Wire Pulse Width Modulation (PWM) Controlled Fans



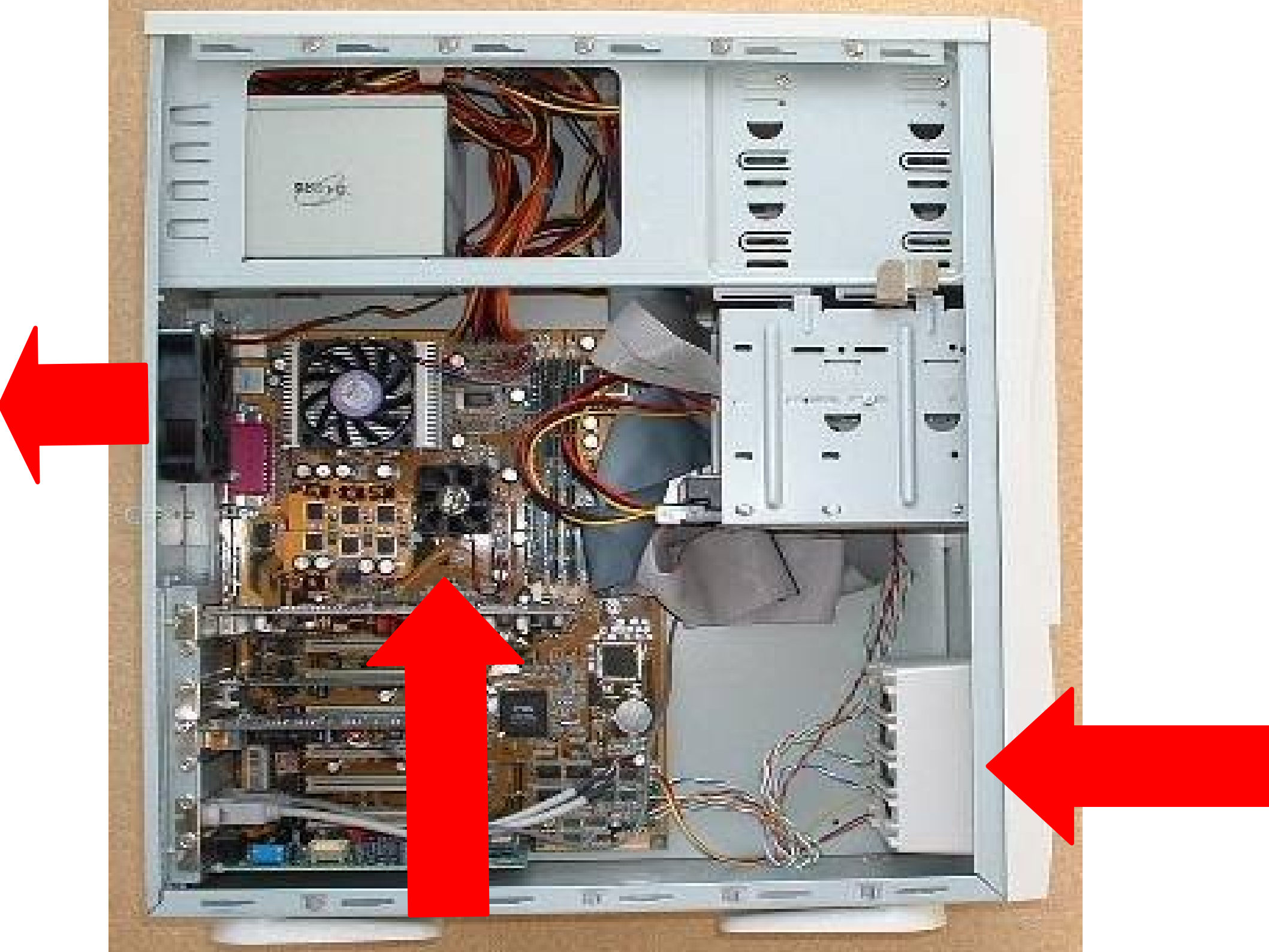
Motherboard CPU Fan 4 Pin header Connector.

Pin	Name
1	GND
2	+12VDC
3	Sense
4	Control

For some AMD cpu fans:

Pin	Name
1	GND
2	+12VDC
3	Sense
4	Control


AIRFLEX



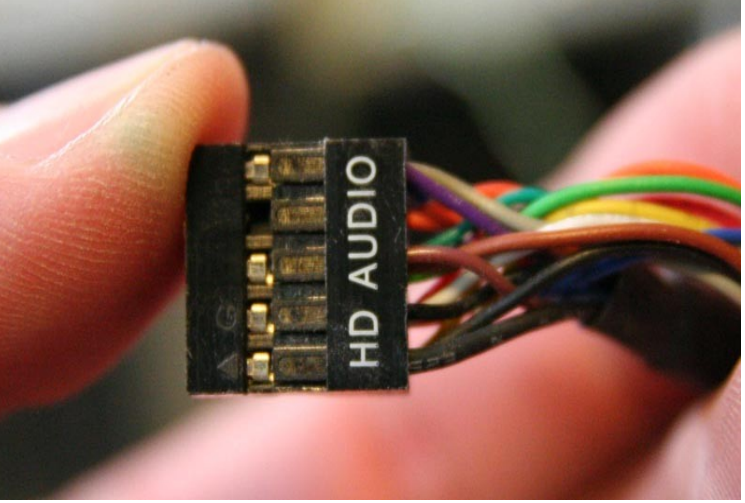
- porovnanie CPU bez vent. http://www.youtube.com/watch?v=NxNUK3U73SI

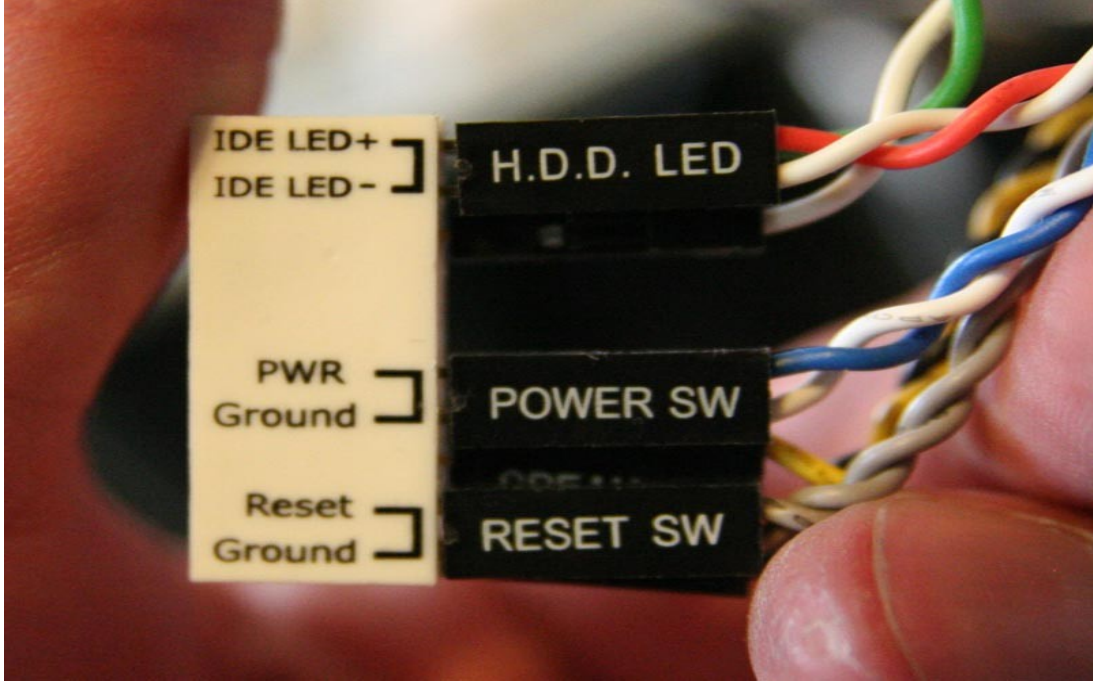
- HOW (NOT) TO – chladenie procesora
- http://www.youtube.com/watch?v=ssL1DA_K0sI

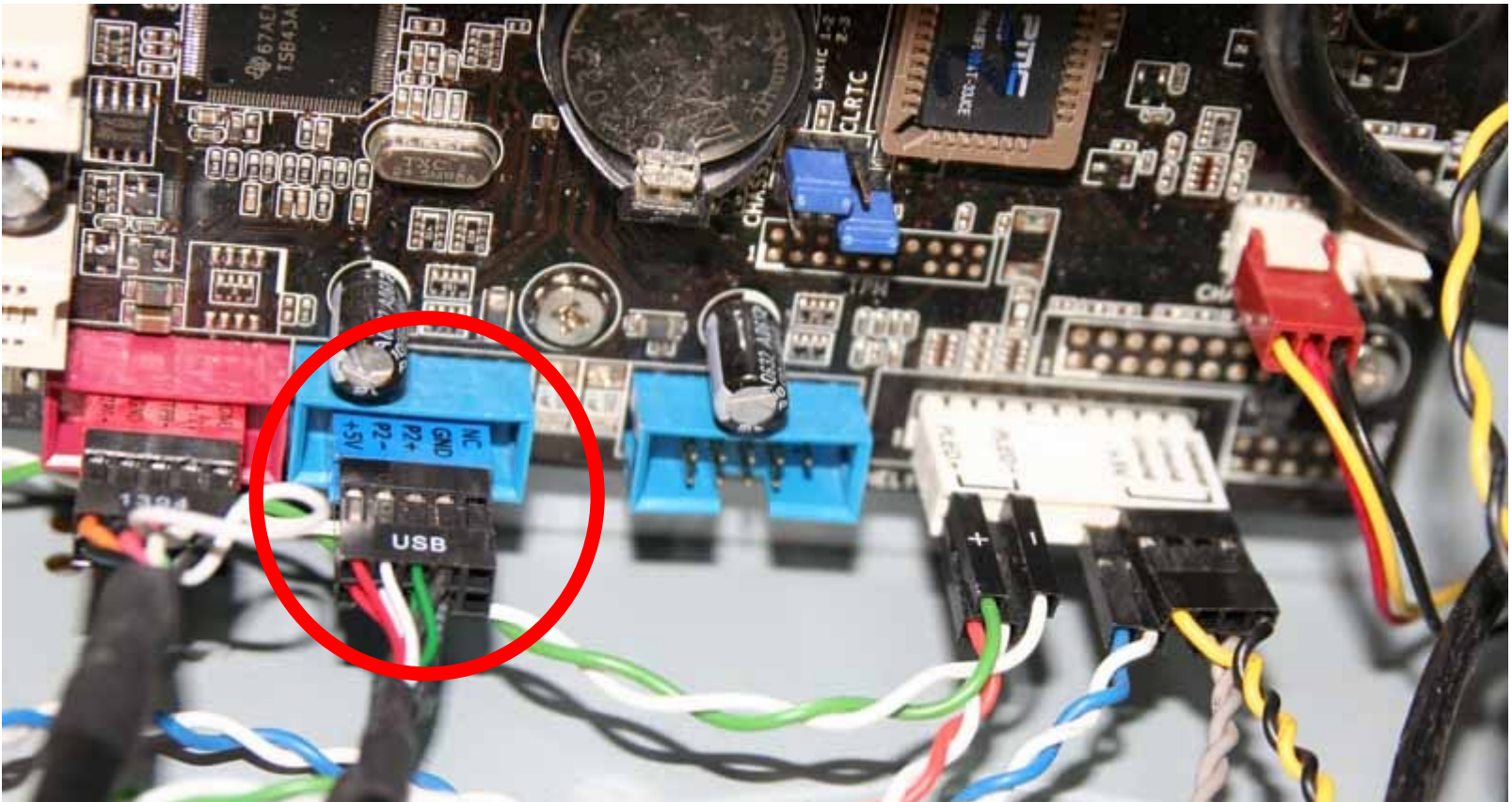
- free energy http://www.youtube.com/watch?v=m_EPxRAAam4

PRINCÍP::::: --> ZHORA dolu

- PC
  - komponenty
    - súčiastky
      - princípy
        - logický návrh
          - 1 a 0 :)
            - elektrické/optické signály (nie zelení mužíkovia s 1 a 0 na chrbte utekajúci v medennom/optickom drôtiku :)


HD AUDIO


IDE LED+
IDE LED-
H.D.D. LED
PWR
Ground
POWER SW
Reset
Ground
RESET SW


USB