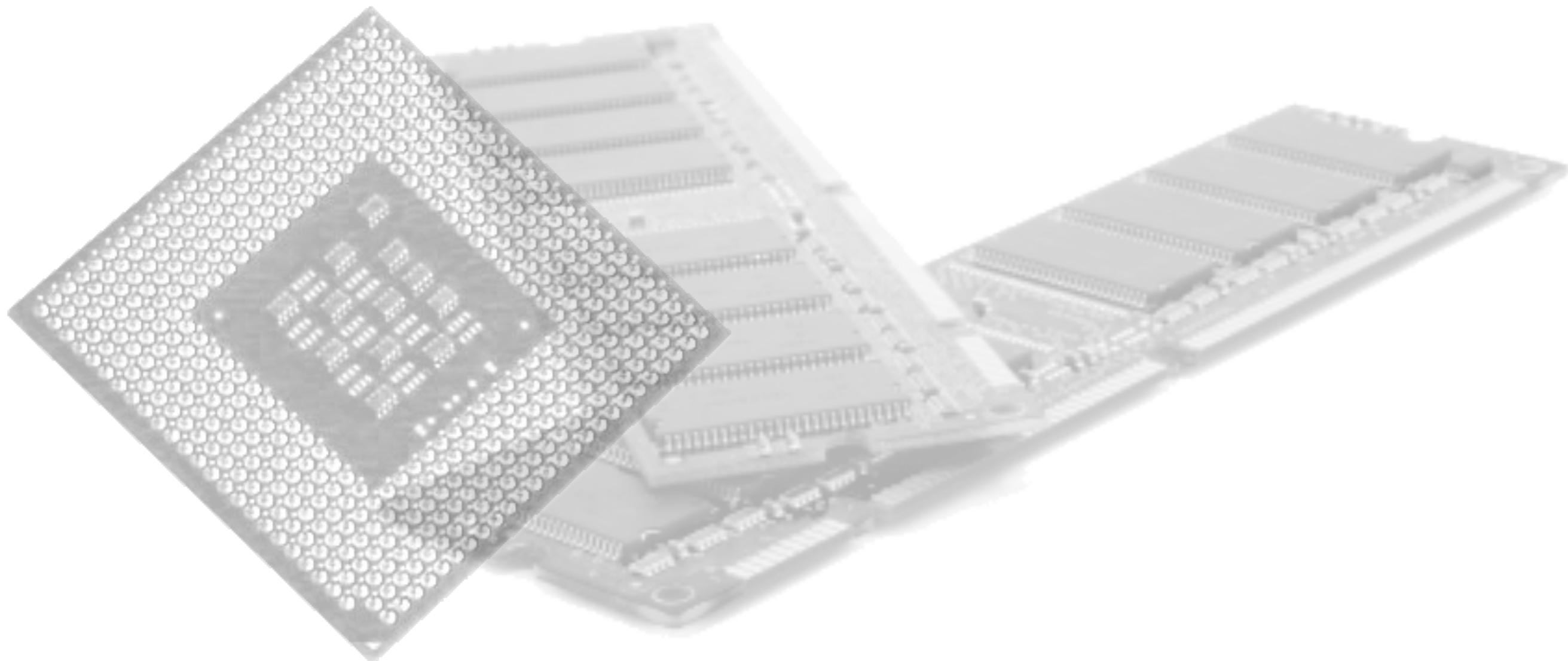
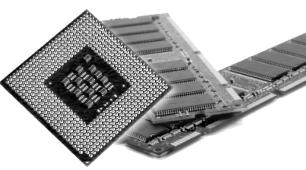


## Prozessor





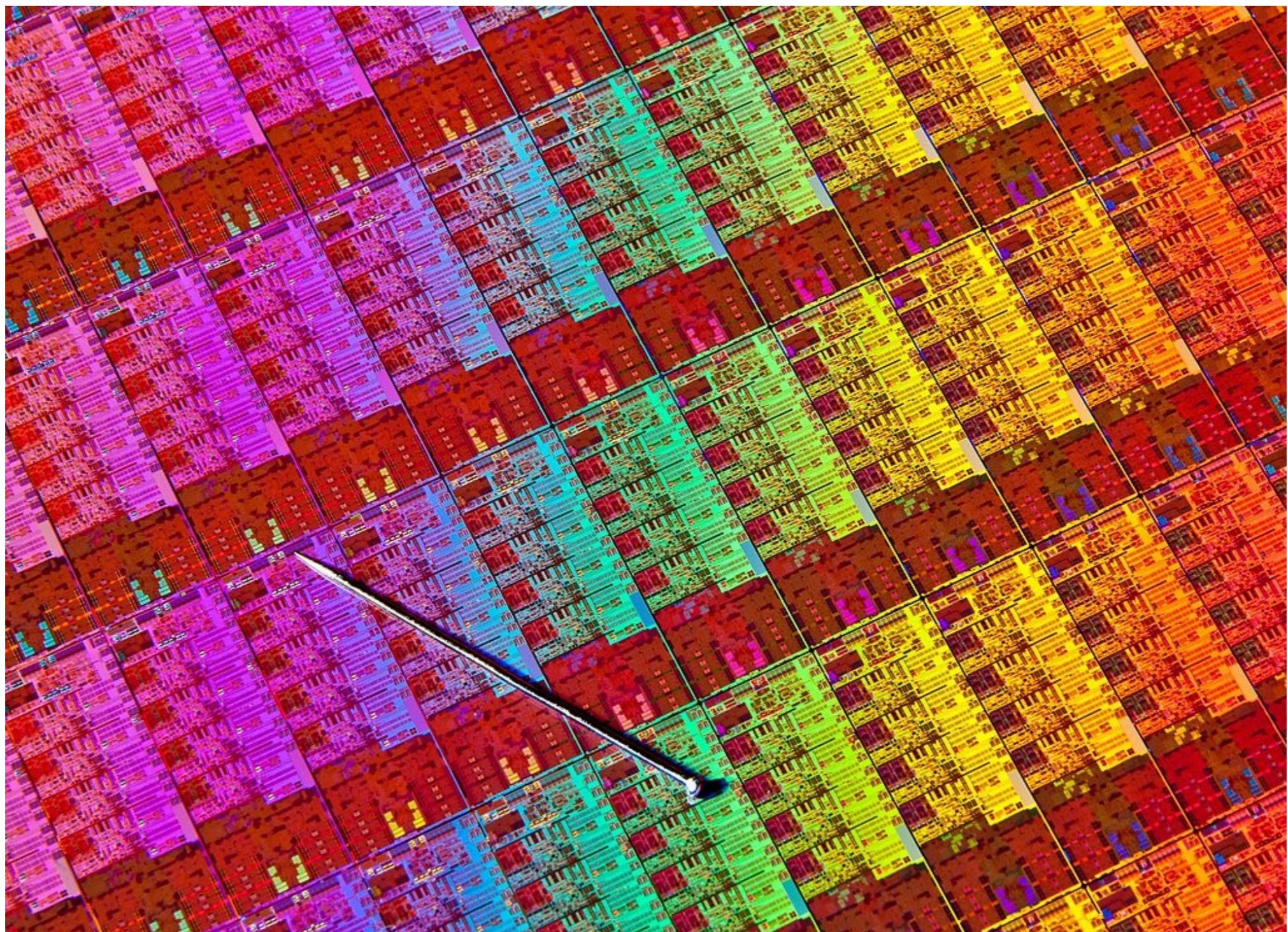
## Intel Core i7-4790K

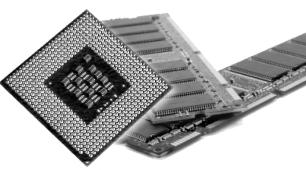
- Haswell Architektur (4. Core-i-Serie) - 64 Bit
- Takt: 4,00 GHz (4,40 GHz Turbo Boost)
- Kerne / Virtuell: 4 / 8
- Sockel: LGA-1150
- L3 Speicher: 8,0 MB
- L2 Speicher: 4 \* 256 KB
- L1 Speicher: 4 \* 64 KB
- Strukturbreite: 22nm
- Thermal Design Power (TDP): 88 W
- Grafik: Intel® HD Graphics 4600



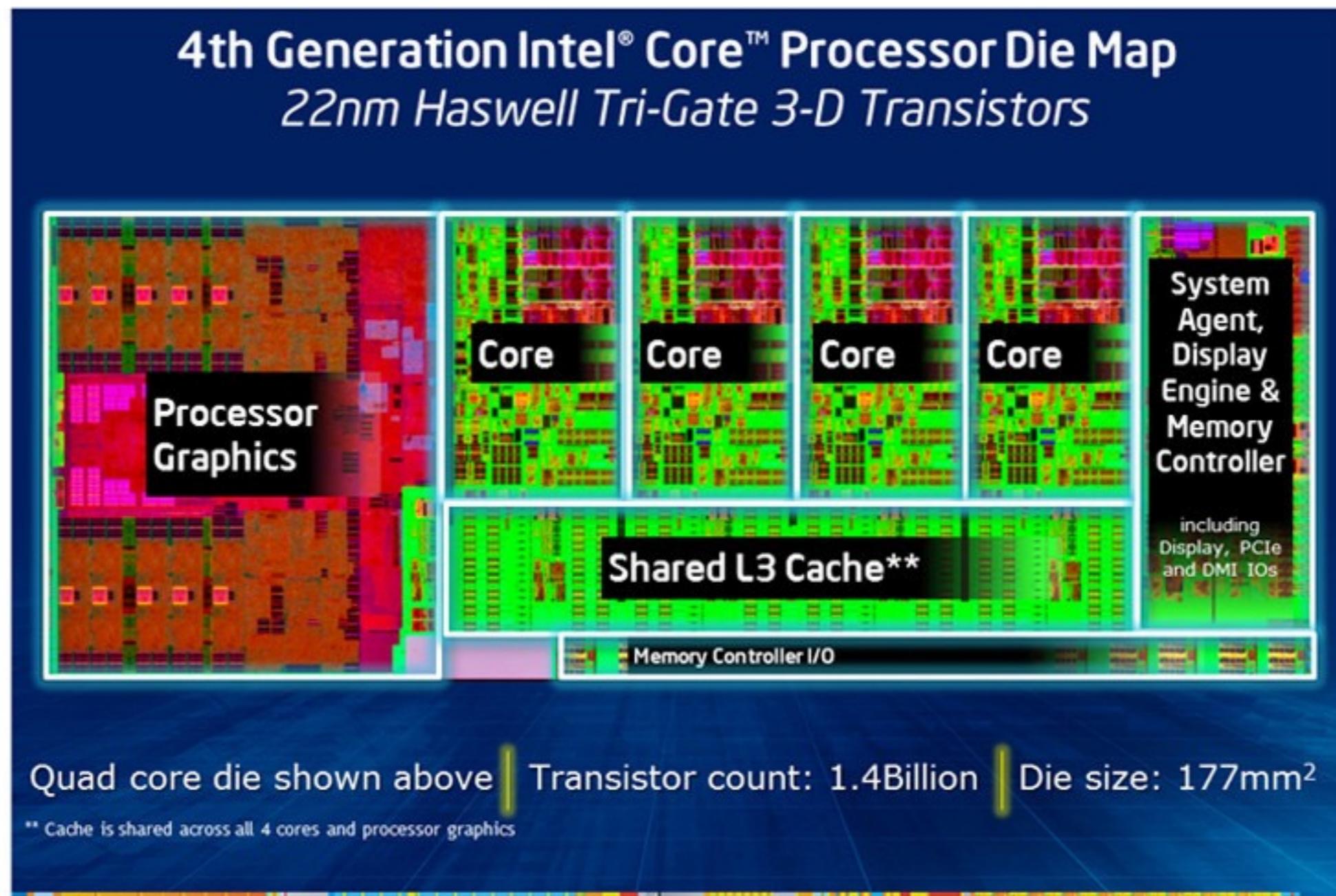


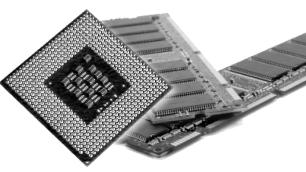
## Intel Core i7-4790K



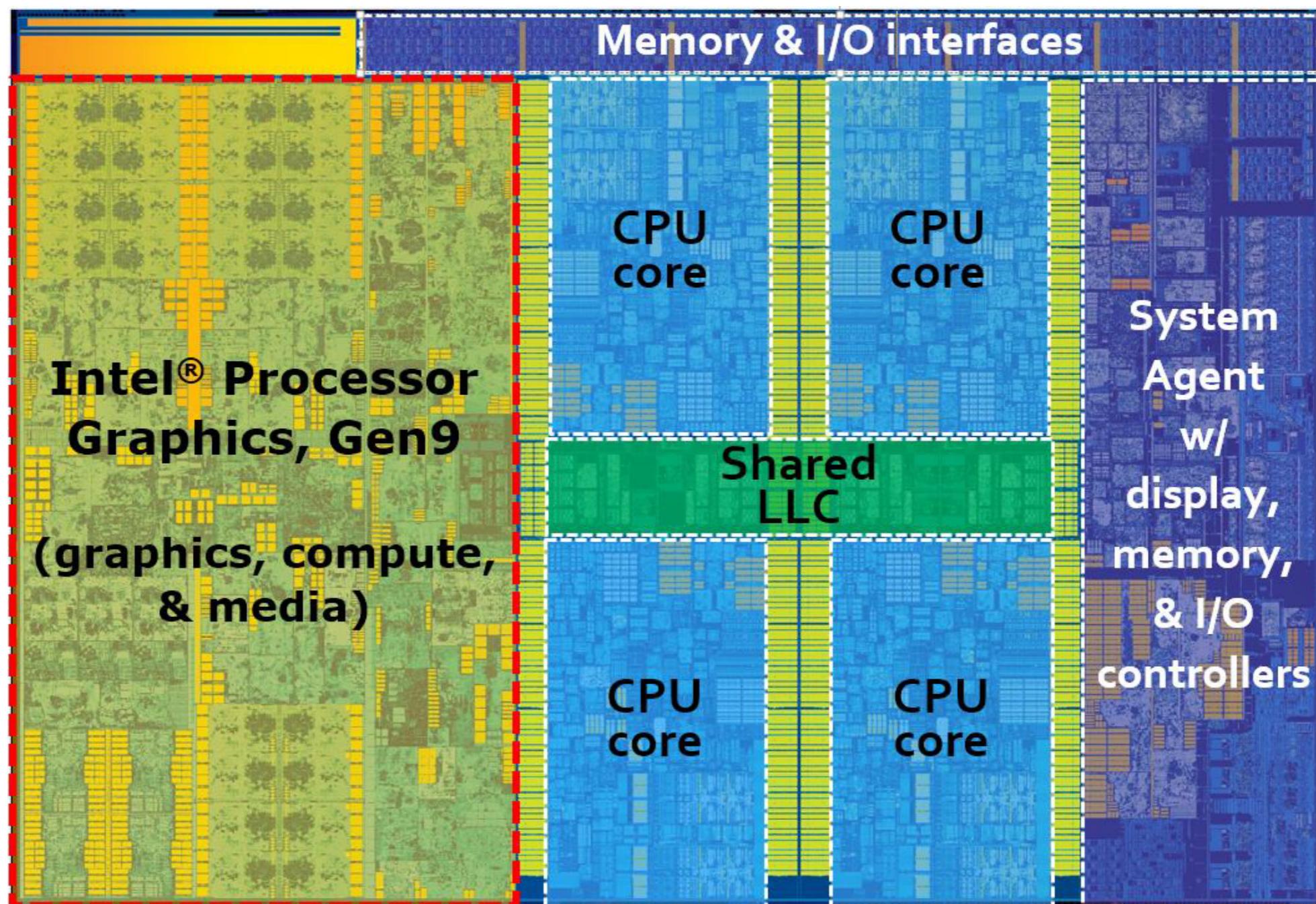


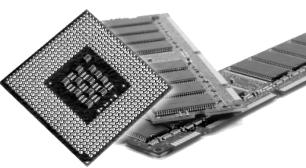
## Intel Core i7-4790K





## Intel Core i7-6700K

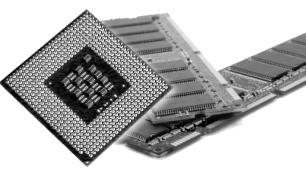




## Intel Core i7-8700K

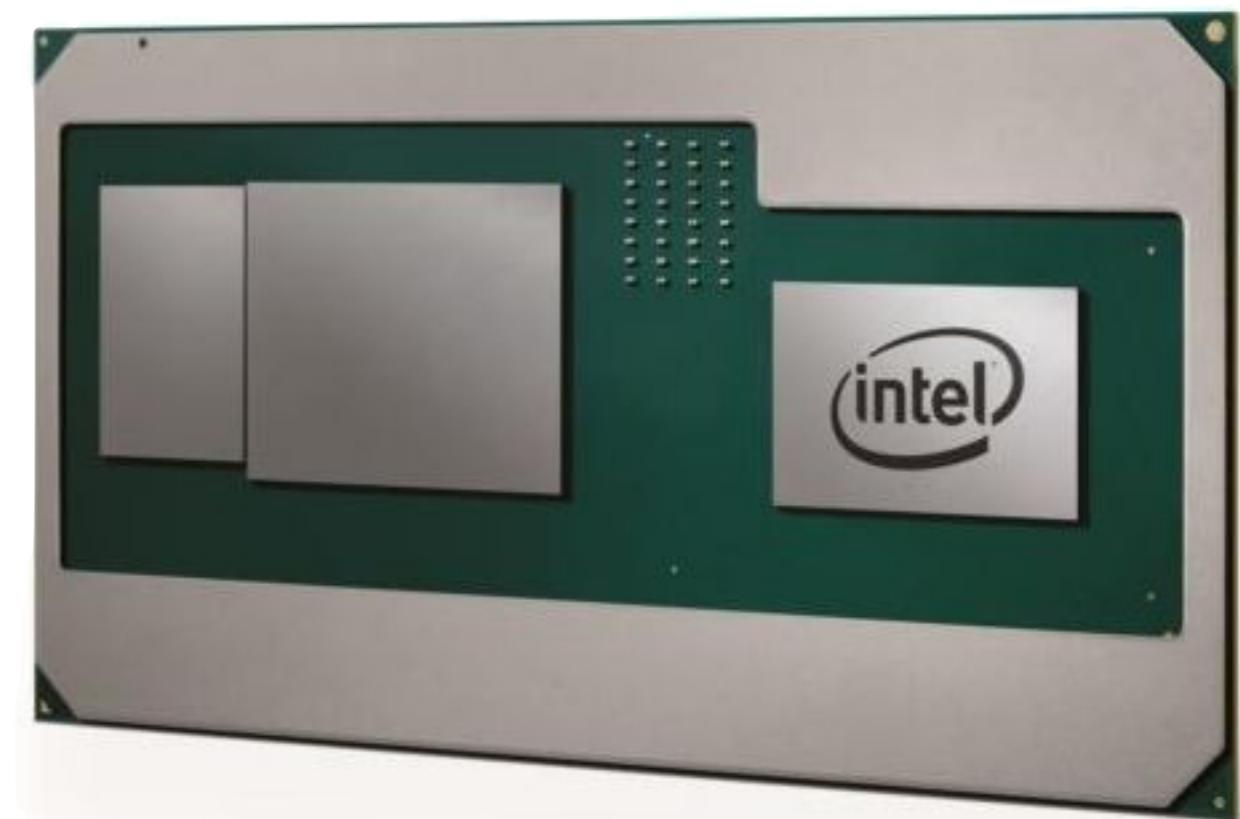
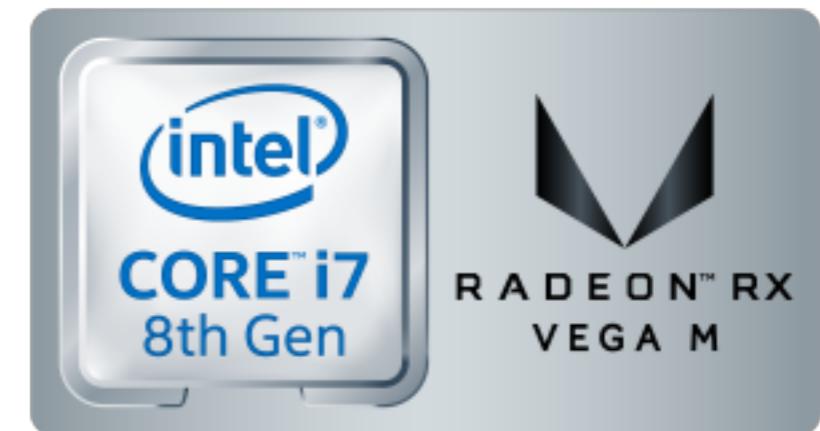
- Coffee Lake Architektur (8. Core-i-Serie) - 64 Bit
- Takt: 3,70 GHz (4,70 GHz Turbo Boost)
- Kerne / Virtuell: 6 / 12
- Sockel: LGA-1151
- L3 Speicher: 12,0 MB
- L2 Speicher: 6 \* 256 KB
- L1 Speicher: 6 \* 64 KB
- Strukturbreite: 14nm
- Thermal Design Power (TDP): 95 W
- Grafik: Intel® UHD Graphics 630 (350 MHz, 1,20 GHz max)

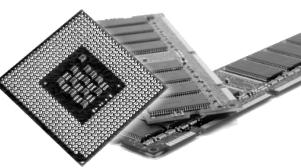




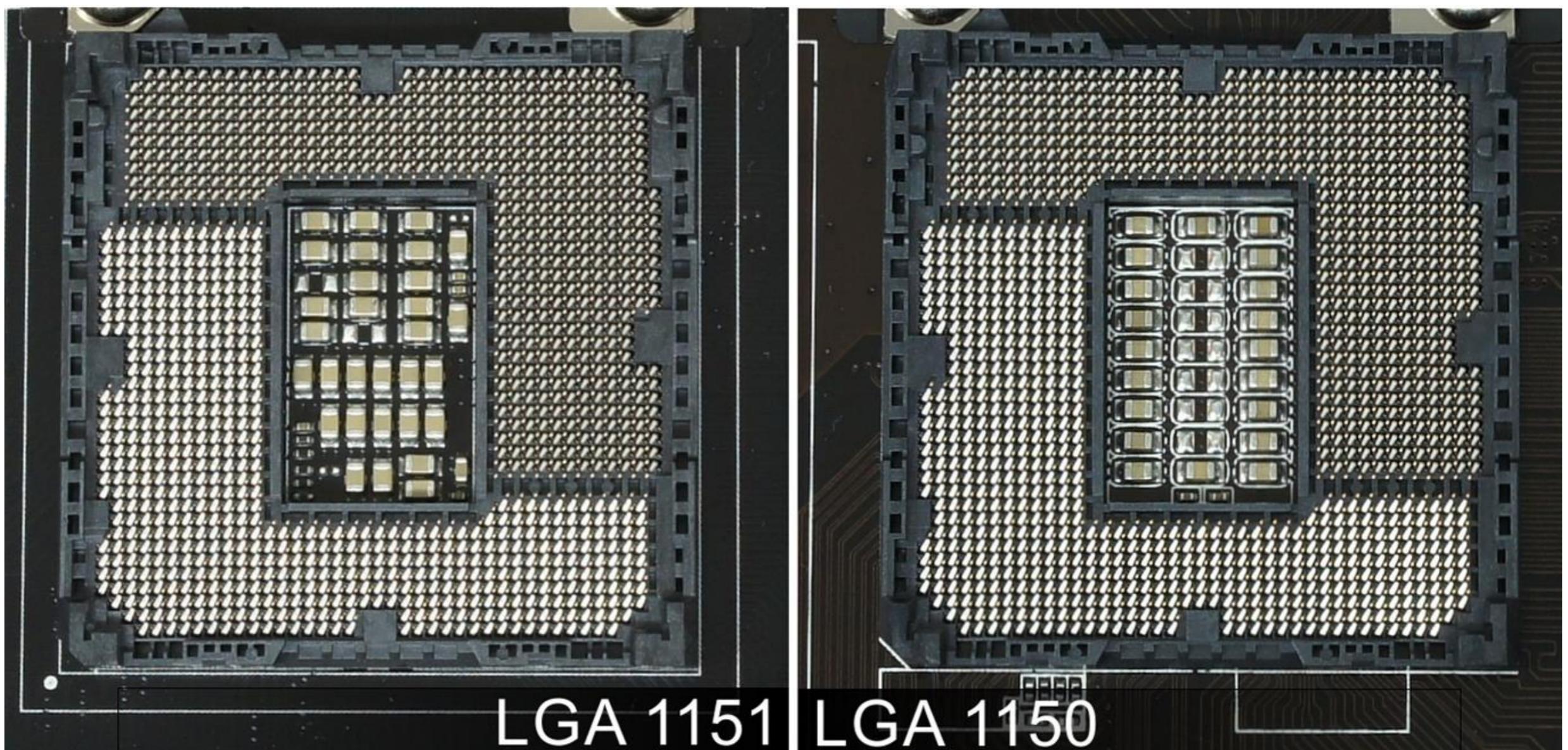
## Intel Core i7-8709G

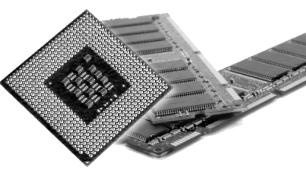
- Kaby Lake Architektur (8. Core-i-Serie) - 64 Bit
- Takt: 3,10 GHz (4,10 GHz Turbo Boost)
- Kerne / Virtuell: 4 / 8
- Sockel: BGA2270
- L3 Speicher: 8,0 MB
- L2 Speicher: 4 \* 256 KB
- L1 Speicher: 4 \* 64 KB
- Strukturbreite: 14nm
- Grafik: RX Vega M GH
- Grafiktakt: 1063 MHz (1190 MHz max)



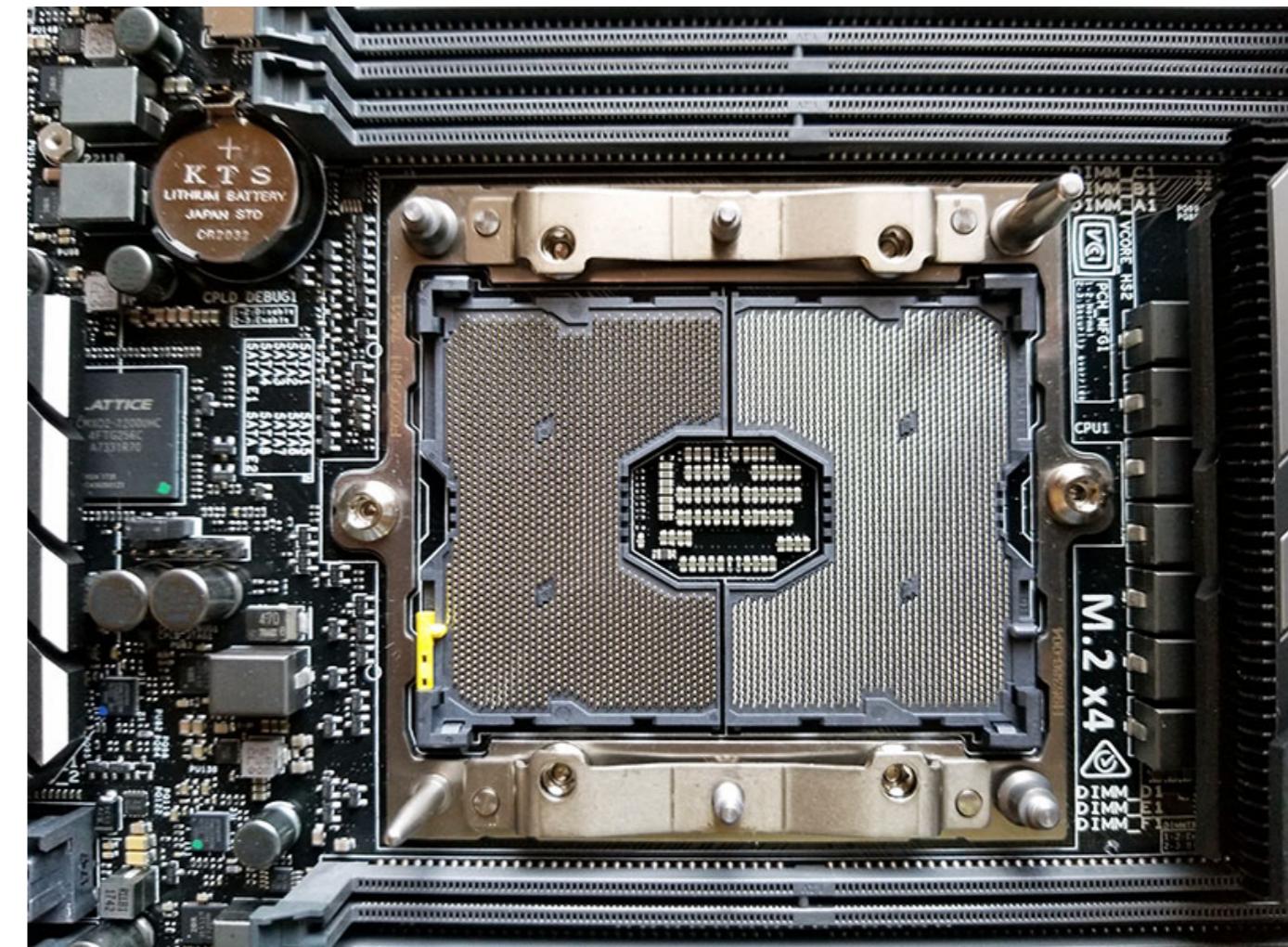
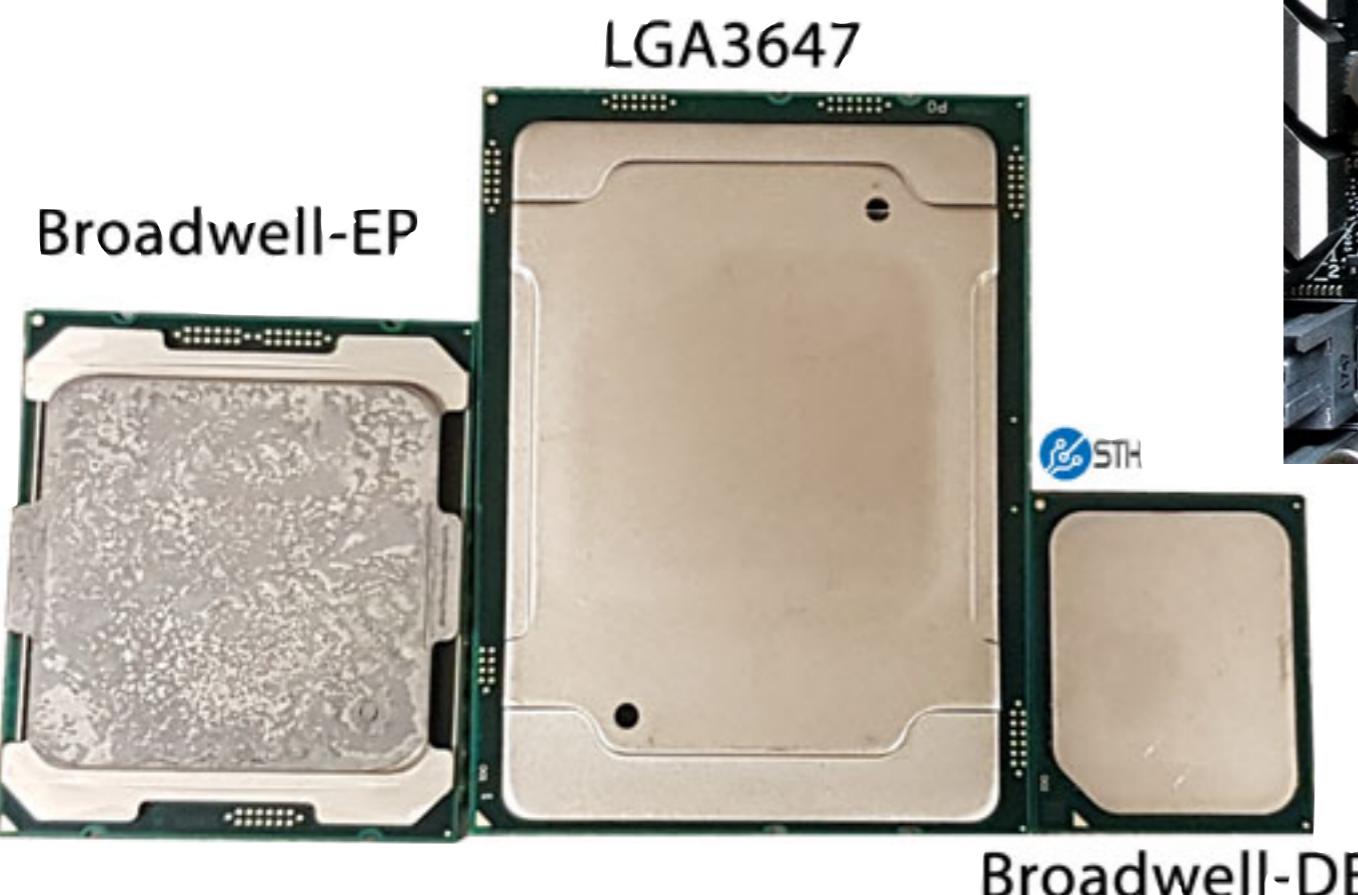


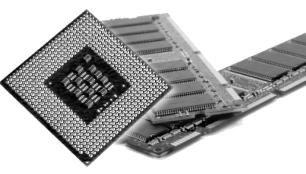
# Sockel LGA 1151 - LGA 1150





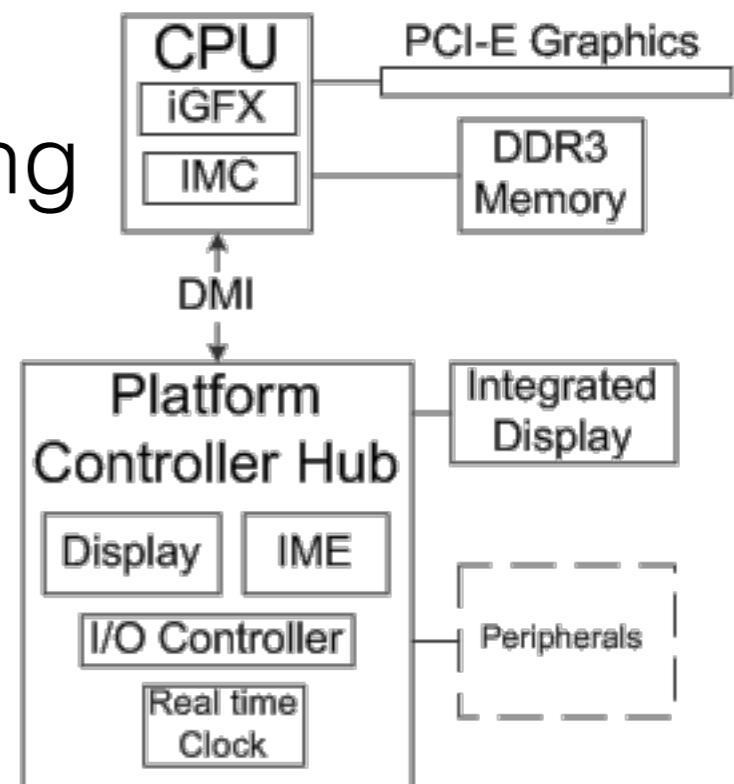
## Weitere Sockel

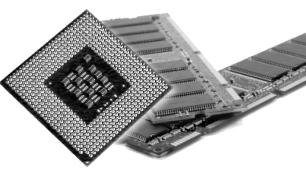




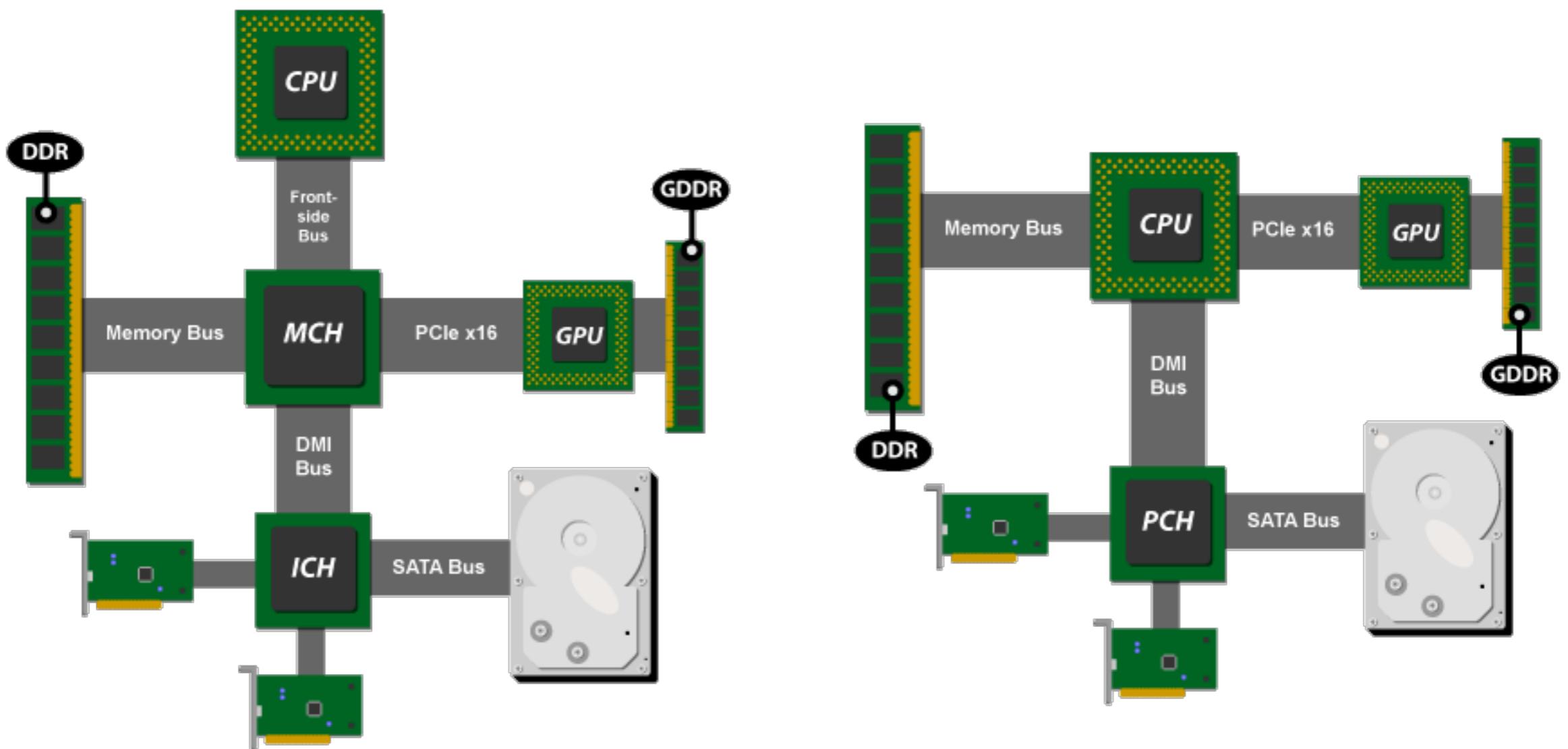
## Platform Controller Hub

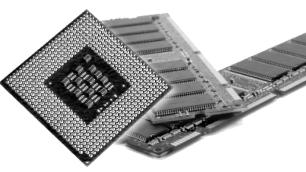
- 2008 vorgestellt von Intel
- Speichercontroller und PCI-Anbindung in die CPU integriert
- Direct Media Interface (DMI)
- PCH übernimmt die verbleibenden Funktionen der Northbridge und die Funktionen der Southbridge



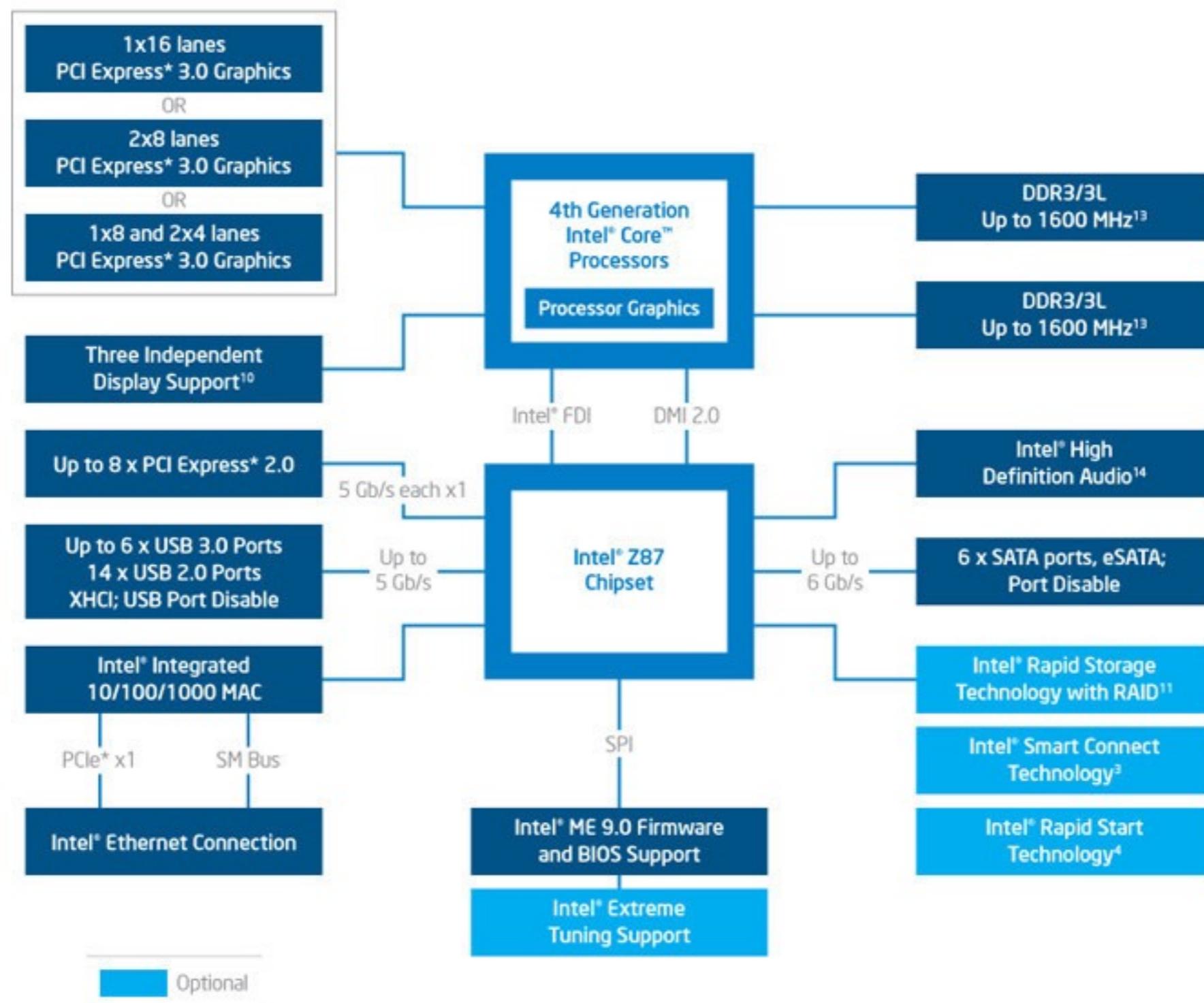


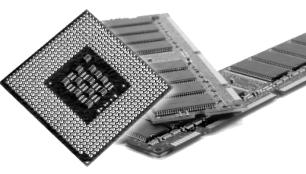
## Platform Controller Hub





## Intel Core i7-4790K

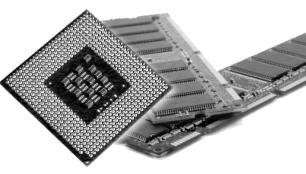




## Intel Z87 Chipset

- für die 4. Generation (Haswell)
- erlaubt auch Übertakten
- übernimmt die I/O Schnittstellen

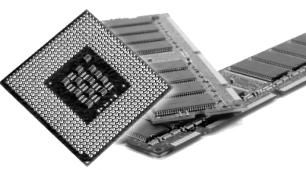




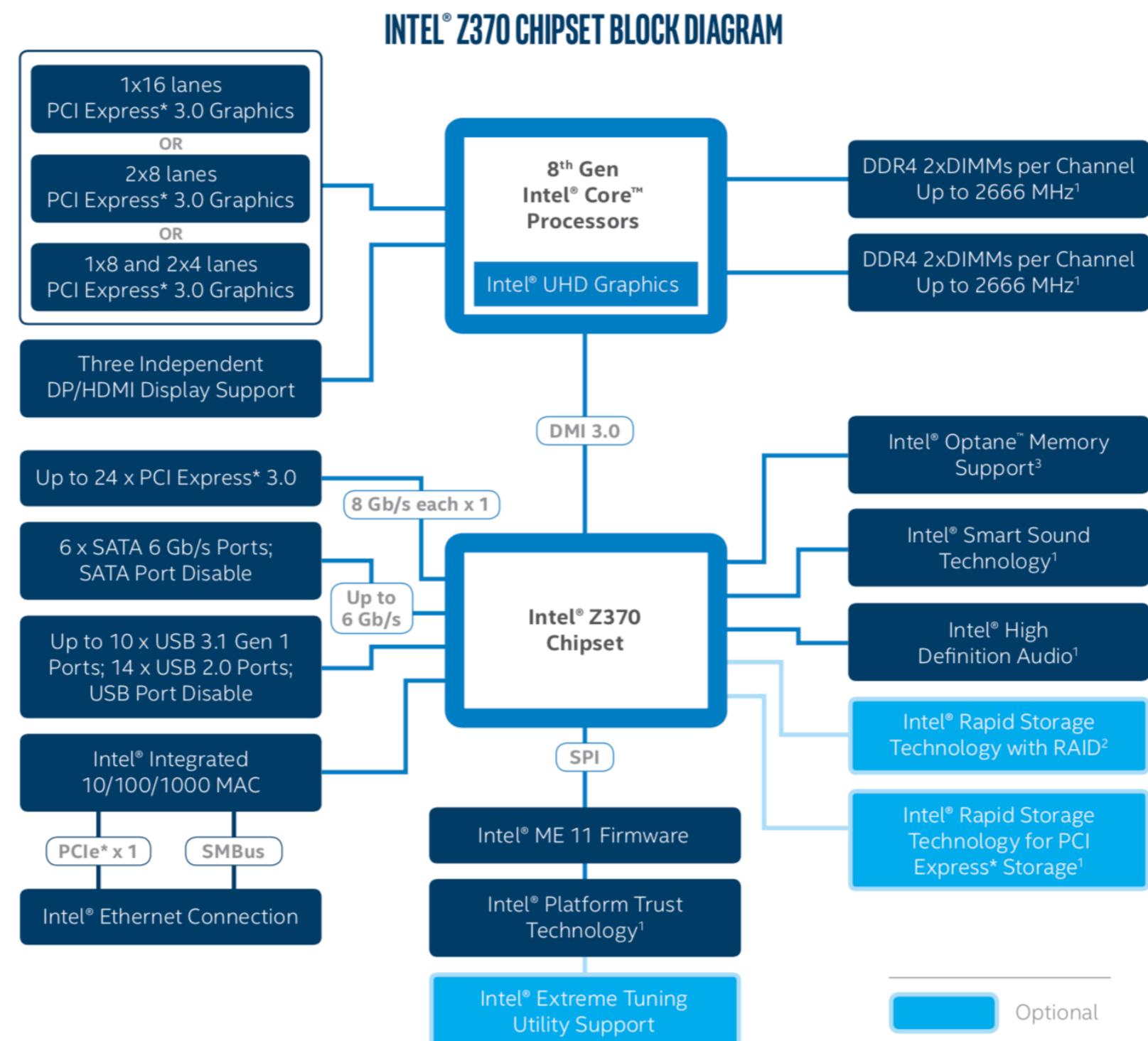
## Z370 Chipsatz

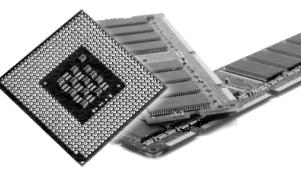
- Bustaktfrequenz: 8 GT/s DMI3
- PCI-Express-Version: 3.0
- PCI-Express-Konfigurationen: x1, x2, x4
- Maximale Anzahl der PCI-Express-Lanes: 24





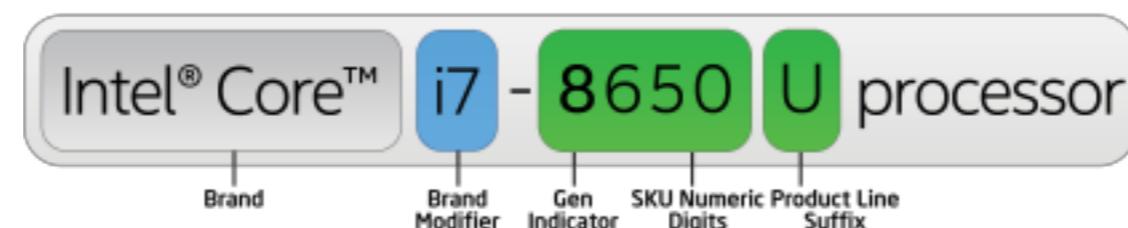
# Z370 Chipsatz



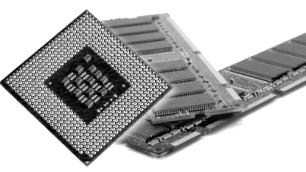


## Intel - Prozessornummern

- <https://www.intel.de/content/www/de/de/processors/processor-numbers.html>



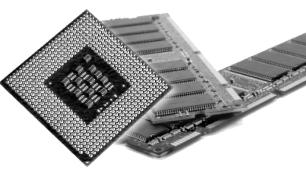
Alpha Suffix	Description	Example
K	Unlocked	8th Gen Intel® Core™ i7-8700K processor
G	Includes discrete graphics on package	8th Gen Intel® Core™ i7-8705G processor
U	Ultra-low power	8th Gen Intel® Core™ i7-8650U processor



## CORE i9-7980XE

- Anzahl der Kerne: 18
- Anzahl der Threads: 36
- Grundtaktfrequenz des Prozessors: 2.60 GHz
- Max. Turbo-Taktfrequenz: 4.20 GHz
- Cache: 24.75 MB
- Bustaktfrequenz: 8 GT/s DMI3
- Max. Anzahl der Speicherkanäle: 4
- Intel® Turbo Boost Max-Technik 3.0 Frequenz 4.40 GHz
- Verlustleistung (TDP): 165 W
- X299 Chipsatz

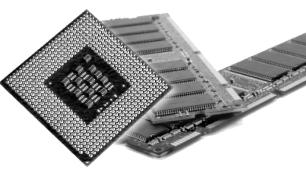




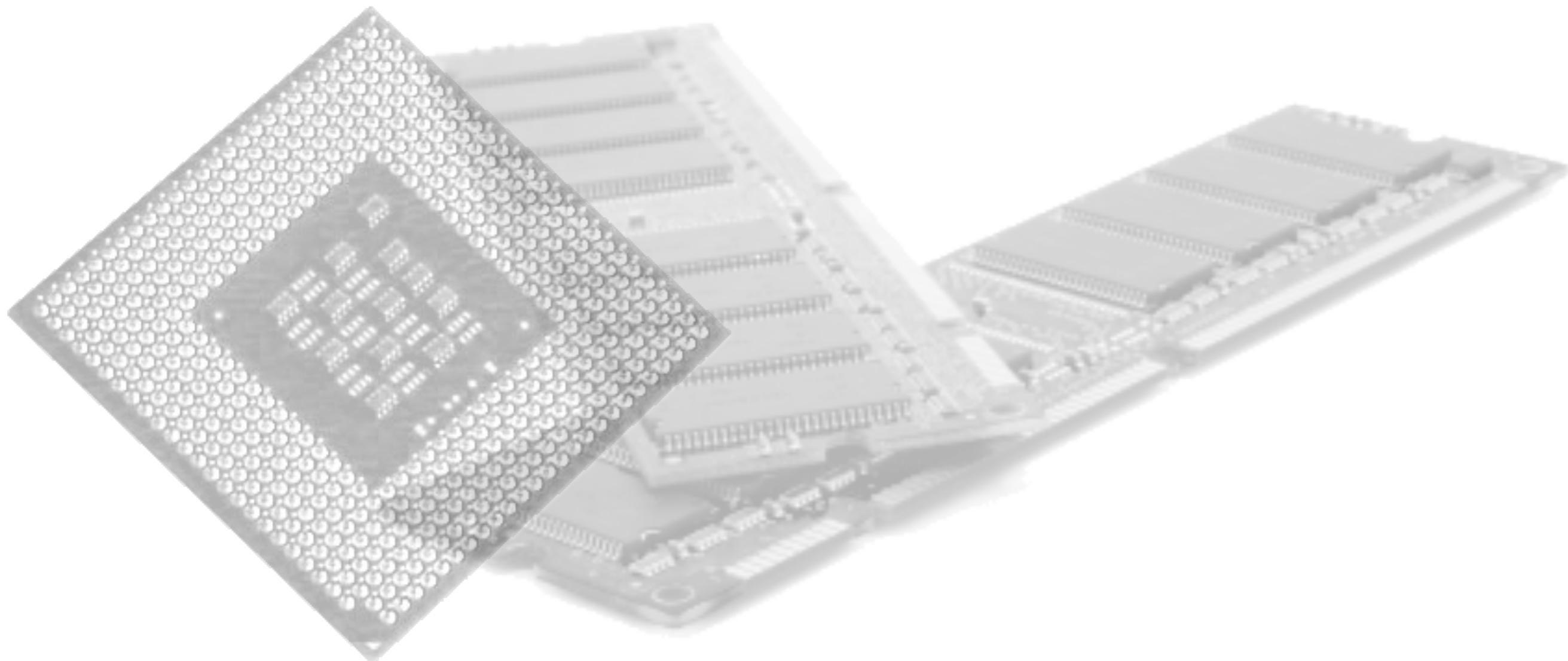
## X299 Chipsatz

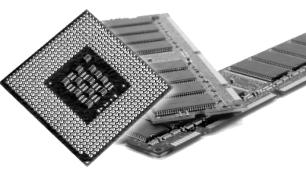
- Bustaktfrequenz: 8 GT/s DMI3
- PCI-Express-Version: 3.0
- PCI-Express-Konfigurationen: x1, x2, x4
- Maximale Anzahl der PCI-Express-Lanes: 24





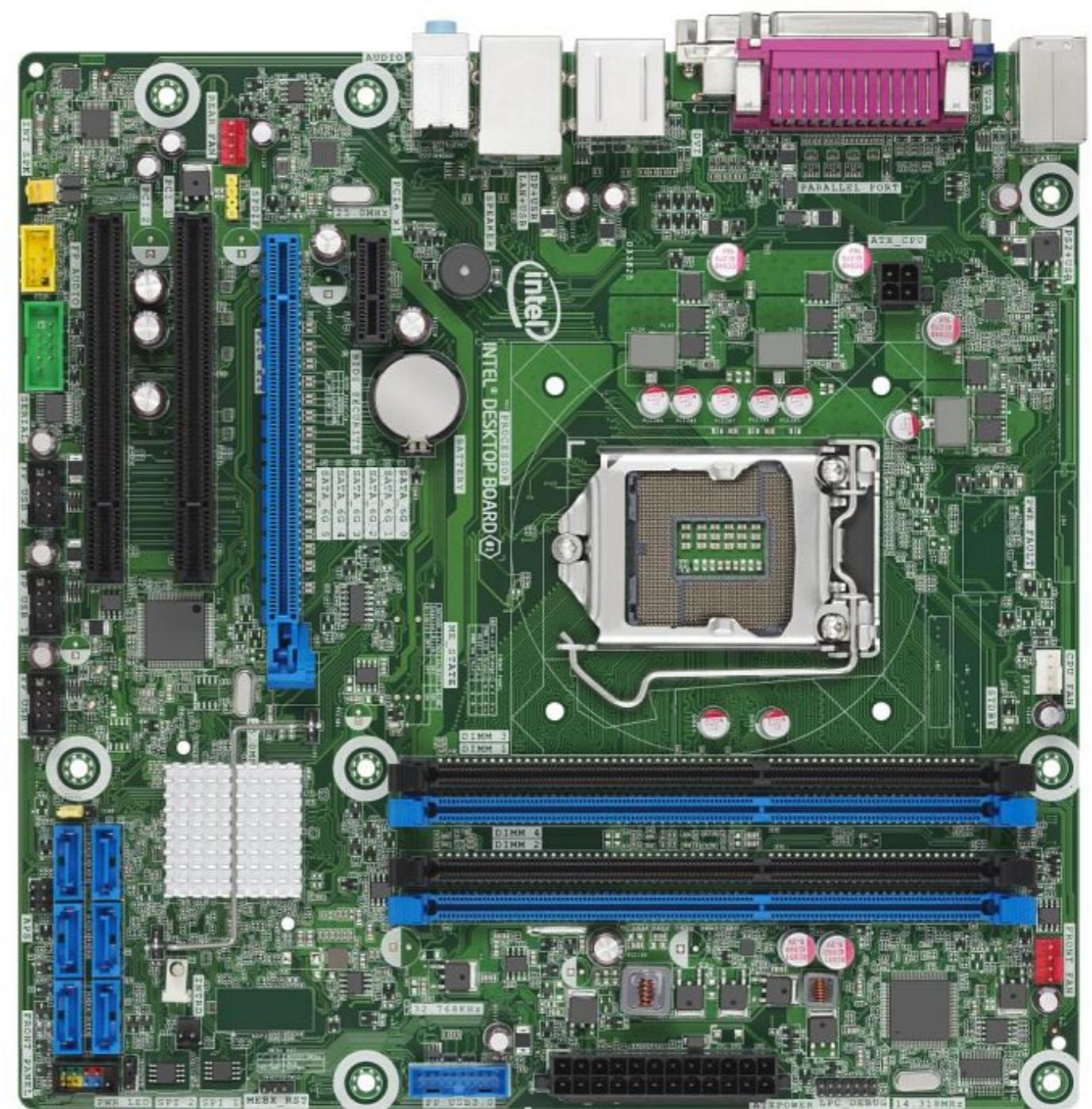
## Mainboard

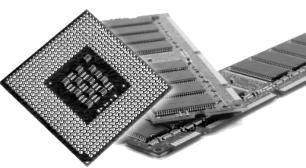




# Intel DQ87PG

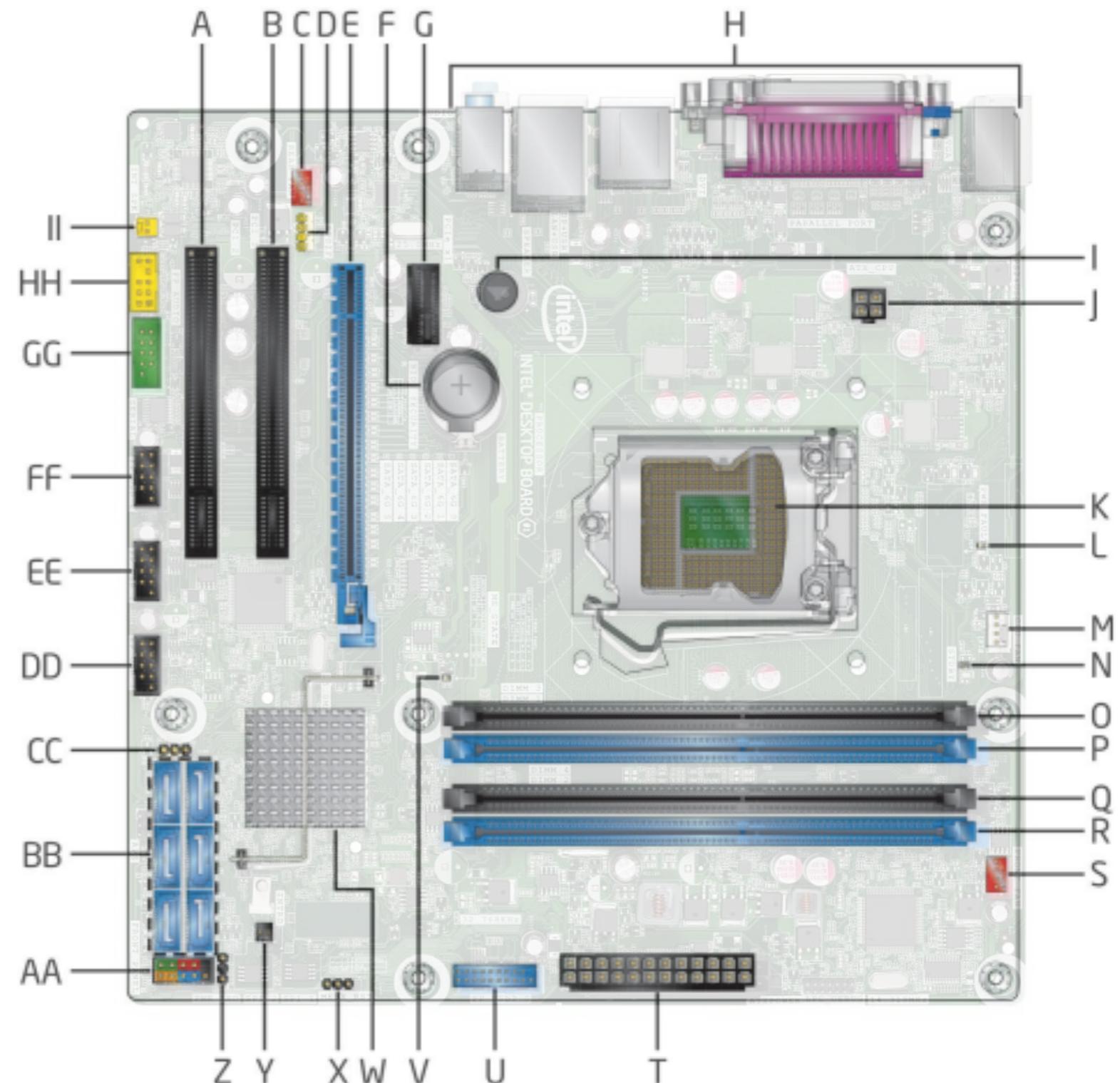
- Mainboard DQ87PG
- Format: Micro-ATX
- LGA1150-Sockel
- Vier Zweikanal-  
DDR3-1600/1333-MHz-DIMMs
- Q87 Chipsatz
- Ein PCI-Express-2.0-x16-  
Steckplatz
- 2 PCI-Express-x1-Steckplätze

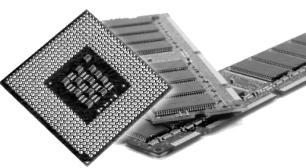




# Intel DQ87PG

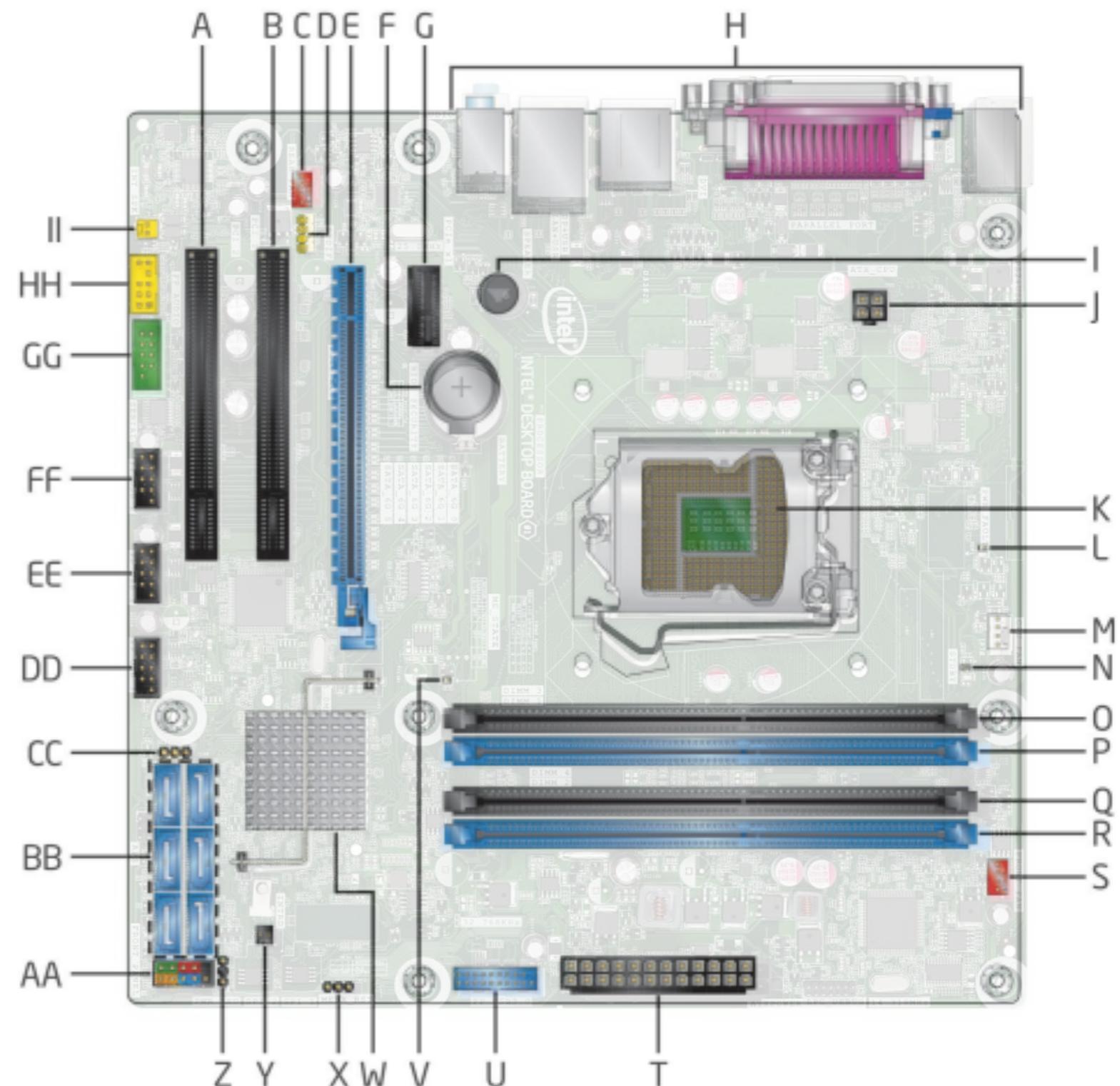
- **A** PCI
- **B** PCI
- **C** Lüfteranschluss
- **D** S/PDIF
- **E** PCIe x16
- **F** Batterie
- **G** PCIe x1
- **H** Anschlüsse
- **I** Lautsprecher
- **J** 12V Prozessor Stecker 2x2
- **K** LGA1150 Socket

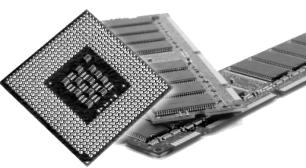




# Intel DQ87PG

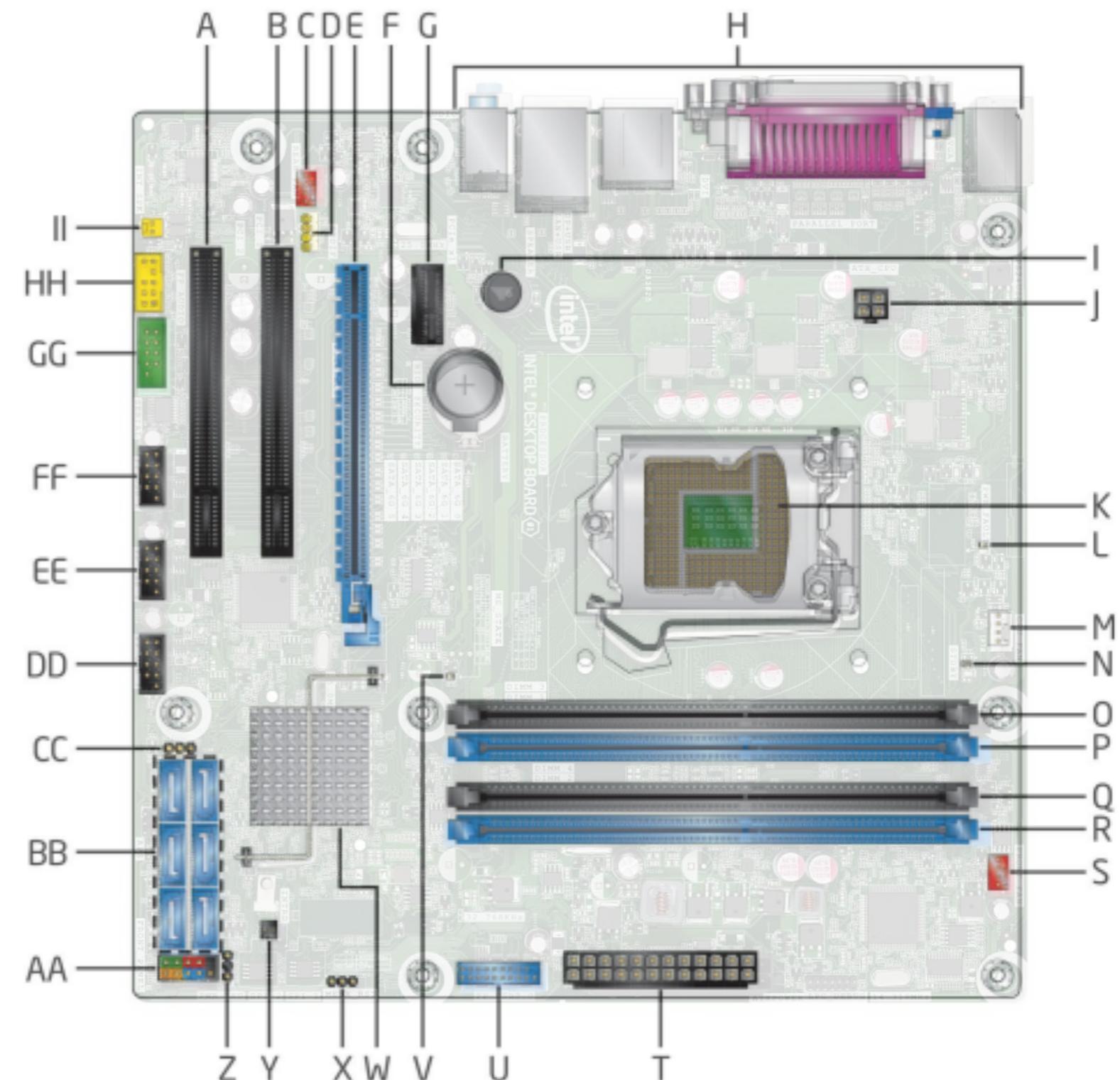
- **L** Power LED
- **M** Prozessor Lüfteranschluss
- **N** Standby LED
- **O** DIMM 3 (Kanal A DIMM 0)
- **P** DIMM 1 (Kanal A DIMM 1)
- **Q** DIMM 4 (Kanal B DIMM 0)
- **R** DIMM 2 (Kanal B DIMM 1)
- **S** Lüfteranschluss
- **T** Stromanschluss 2x12
- **U** USB 3.0
- **V** Management "M" LED
- **W** Intel Q87 Chipset

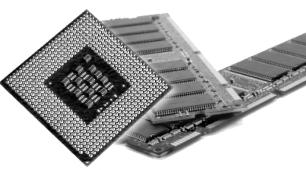




# Intel DQ87PG

- **X** Management Reset
- **Y** Gehäuse Sicherung
- **Z** Alternative Power / Sleep LED
- **AA** Front Panel Anschluss
- **BB** SATA 6.0 Gb/s
- **CC** BIOS Jumper
- **DD** USB 2.0
- **EE** USB 2.0
- **FF** USB 2.0
- **GG** Serial Port
- **HH** Audio Anschluss
- **II** Mono Audio Ausgang

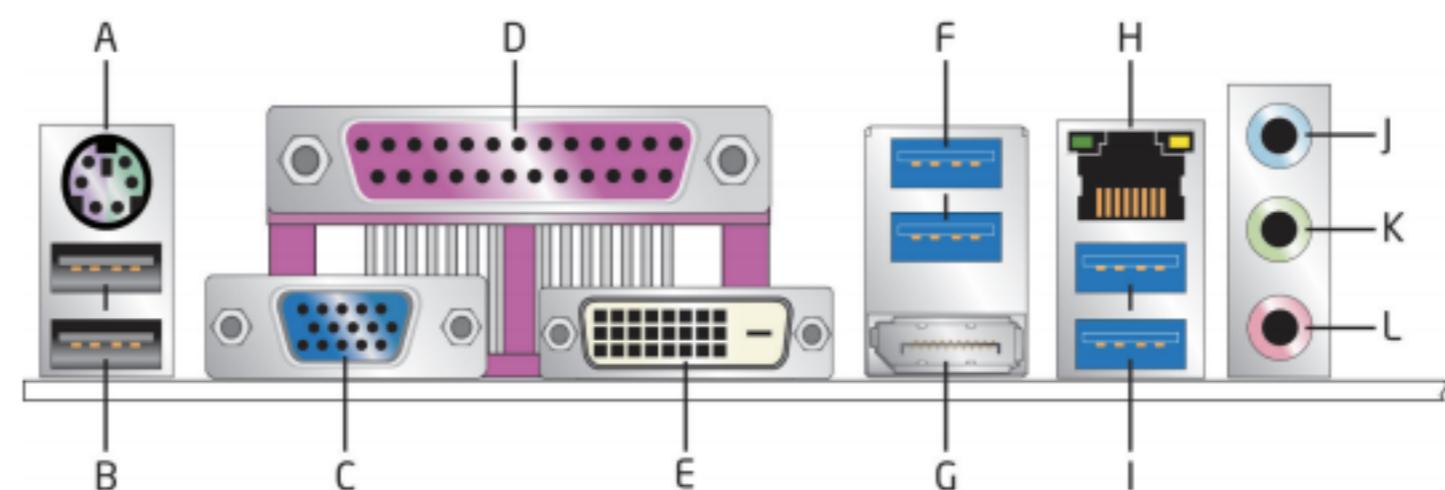




# Anschlüsse

## 2.2.1 Back Panel Connectors

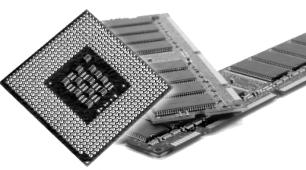
Figure 9 shows the location of the back panel connectors for the board.



OM23965

Item	Description
A	PS/2 port
B	USB 2.0 ports
C	VGA connector
D	Parallel port
E	DVI-D connector
F	USB 3.0 connectors
G	DisplayPort connector
H	LAN port
I	USB 3.0 connectors
J	Line-in (surround)
K	Line-out (front speakers)
L	Mic-in (center/sub)

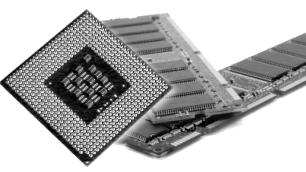
Figure 9. Back Panel Connectors



## PCI Express

- Peripheral Component Interconnect Express (PCIe oder PCI-E)
- serielle Punkt zu Punkt Verbindung (keine parallele Übertragung von Daten)
- Vollduplex (gleichzeitiges Senden und Empfangen möglich)
- Daten werden in Paketen gesendet
- prinzipiell Hot-Plug fähig (solange die Hardware es unterstützt)



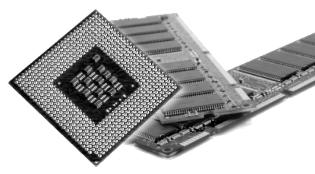


# PCI Express

## Datenrate PCI Express

Burstrate ohne Protokoll-Overhead

	PCIe 1.0/1.1	PCIe 2.0/2.1	PCIe 3.0	PCIe 4.0
<b>Erschienen</b>	2003	2007	2012	~2016 <sup>[1]</sup>
<b>Taktrate</b>	1,25 GHz	2,5 GHz	4,0 GHz	~8,0 GHz
<b>Transfers/s (je Lane und Richtung)</b>	2,5 GT/s	5,0 GT/s	8,0 GT/s	16,0 GT/s <sup>[2]</sup>
<b>Kodierung</b>	8b10b	8b10b	128b130b	128b130b
<b>Lanes (Breite)</b>				
<b>x1</b>	250 MB/s <sup>[3]</sup>	500 MB/s	985 MB/s	1969 MB/s
<b>x2</b>	500 MB/s	1000 MB/s	1969 MB/s	3938 MB/s
<b>x4</b>	1000 MB/s	2000 MB/s	3938 MB/s	7877 MB/s
<b>x8</b>	2000 MB/s	4000 MB/s	7877 MB/s	15754 MB/s
<b>x16</b>	4000 MB/s	8000 MB/s	15754 MB/s	31508 MB/s
<b>(x32)</b>	8000 MB/s	16000 MB/s	31508 MB/s	63015 MB/s



# PCI Express

