



# Fact Sheet

## FUN FACTS: EXACTLY HOW SMALL (AND POWERFUL) IS 45 NANOMETERS?

- There are 1 billion nanometers (nm) in one meter. A meter is approximately 3 feet.
- The original transistor built by Bell Labs in 1947 could be held in your hand, while hundreds of Intel's new 45nm transistors can fit on the surface of a single red blood cell.
- If a house shrunk at the same pace transistors have, you would not be able to see a house without a microscope. To see the 45nm transistor, you need a very advanced microscope.
- The price of a transistor in one of Intel's forthcoming next-generation processors -- codenamed Penryn -- will be about 1 millionth the average price of a transistor in 1968. If car prices had fallen at the same rate, a new car today would cost about 1 cent.
- You could fit more than 2,000 45nm transistor gates across the width of a human hair.
- You could fit more than 30 million 45nm transistors onto the head of a pin, which measures approximately 1.5 million nm (1.5 mm) in diameter.
- More than 2 million 45nm transistors could fit on the period at the end of this sentence (estimated to be 1/10 square millimeter in area).
- A 45nm transistor can switch on and off approximately 300 billion times a second. A beam of light travels less than a tenth of an inch during the time it takes a 45nm transistor to switch on and off.

### 45nm Size Comparison

- A nail = 20 million nm
- A human hair = 90,000nm
- Ragweed pollen = 20,000nm
- Bacteria = 2,000nm
- Intel 45nm transistor = 45nm
- Rhinovirus = 20nm
- Silicon atom = 0.24nm