What is Tjunction max temperature?

Tjunction max is the maximum thermal junction temperature that a processor will allow prior to using internal thermal control mechanisms to reduce power and limit temperature. Activation of the processor's thermal control system may cause performance loss as the processor typically reduces frequency and power to prevent overheating. The goal for a system builder or a do-it-yourself (DIY) end user is to design a platform configuration that keeps the processor under the Tjunction max threshold during heavy workloads to maximize performance of the system.

The benefit to a user is that many third-party utilities can monitor the digital thermal sensor (DTS) on the processor die to see how close the system is approaching the Tjunction max temperature without any destructive testing. We recommend that end users look up information on the product specification page (ark.intel.com) to aid them in system assembly. Original design manufacturers should consult the nondisclosure agreement (NDA) documentation available to them for full details.

What is Tcase max temperature?

Tcase max is measured by characterizing a socketed processor with an integrated heat spreader (IHS) for operation within an assembled system. This specification is set to ensure the processor does not exceed its operating temperature so long as the system is able to provide adequate cooling to maintain the top of the IHS at this temperature. This is primarily intended for system manufacturers in assessing their system design.

Could my processor get damaged from overheating?

It's unlikely that a processor would get damaged from overheating, due to the operational safeguards in place. Processors have two modes of thermal protection, throttling and automatic shutdown. When a core exceeds the set throttle temperature, it will reduce power to maintain a safe temperature level. The throttle temperature can vary by processor and BIOS settings. If the processor is unable to maintain a safe operating temperature through throttling actions, it will automatically shut down to prevent permanent damage.

Does Intel provide temperature ranges for each processor?

We do not provide typical temperature operating ranges for each processor, as it can vary based on the system design and workload. Processors have internal protections to prevent against excessive temperatures. Operating ranges below the protection points are highly dependent on system configuration and workload. You can find the thermal specifications for specific

processors in Intel® Core™ Processor technical documentation which includes the temperature limits in which Intel processors are guaranteed to operate.

How can I check the Tjunction max or Tcase max for my processor?

Follow these steps:

1. Visit our product specification information page.
2. Enter the Intel processor number in the search box. Refer to How to Identify My Intel® Processor.
3. Open the processor page, click Package Specifications.
4. Look for Tjunction or Tcase value.

Is it bad if my processor frequently approaches or reaches its maximum temperature?

Not necessarily. Many Intel® processors make use of Intel® Turbo Boost Technology, which allows them to operate at very high frequency for a short amount of time. When the processor is operating at or near its maximum frequency it's possible for the temperature to climb very rapidly and quickly reach its maximum temperature. In sustained workloads, it's possible the processor will operate at or near its maximum temperature limit. Being at maximum temperature while running a workload isn't necessarily cause for concern. Intel processors constantly monitor their temperature and can very rapidly adjust their frequency and power consumption to prevent overheating and damage.

How can I check if my system cooling solution is adequate?

Since normal operation can result in CPU temperatures being at their maximum value, it is difficult to tell purely from temperature alone if your system is having problems. If you purchased your system complete from a vendor, you should contact them for specific steps to take to troubleshoot your system

Where can I find more information if my computer is overheating?

Always contact the system manufacturer when you have an overheating issue.

Here are some resources that address overheating and prevention of overheating:

Warning signs of overheating

What processor graphics do 5th Generation Intel® Core™ Desktop Processors use?

The i5-5675C / i7-5775C LGA1150-based processors use Intel® Iris® Pro Graphics 6200. The i5-5575R, i5-5675R, and i7-5775R Processors use Intel® Iris® Pro Graphics 6200.

These processors use the BGA1364 package type. For more information, see the Quick Guide Reference Guide for Intel® Core™ Processor Graphics.

Where can I get graphics drivers for my processor?

For all Intel® drivers, use the Intel® Driver & Support Assistant. The global version of the Intel Driver & Support Assistant incorporates an analysis of graphics drivers and an analysis on other drivers. For instance, audio and network drivers included with the Intel® Desktop Boards.

As an alternative, you can visit the Intel Download Center to manually search and download drivers. See how to manually find Intel® Graphics Drivers.

Where can I find out more about Intel® Graphics Drivers?

See the Intel® Graphics Driver frequently asked questions.