Thermal Module Calculator

User Guide for an Open System

More innovation. Less heat.

Why do you need this calculator?

A single heat-conducting and heat-dissipating material can no longer solve the complex heat dissipation problem, and the heat dissipation module is relatively important for the mechanism design. However, because of the many factors that need to be considered for a thermal module, engineers often need to go through multiple experiments and verifications to get the best results. The thermal module calculator of an open system can help you figure out a more likely solution while it is in an open system.

Many variables of the computer have been fixed or limited. If you need an engineer for a product that exceeds the input parameter range, please contact our technical team from the "Contact us" page. We strive to be as accurate as possible, but this is just a model.
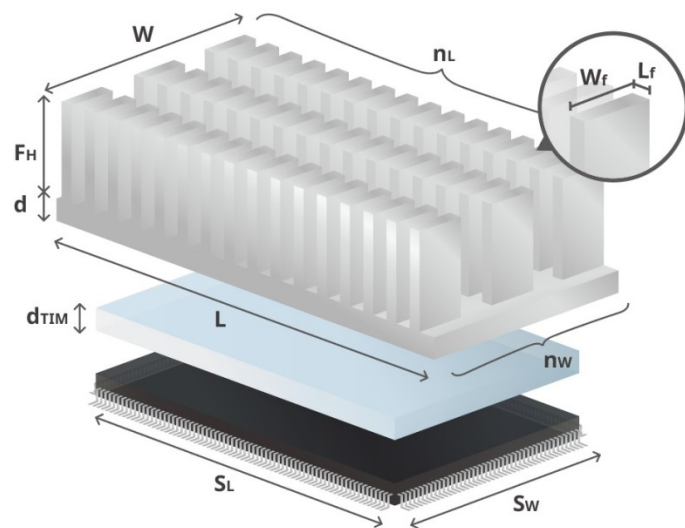
Nomenclature (Flat type)
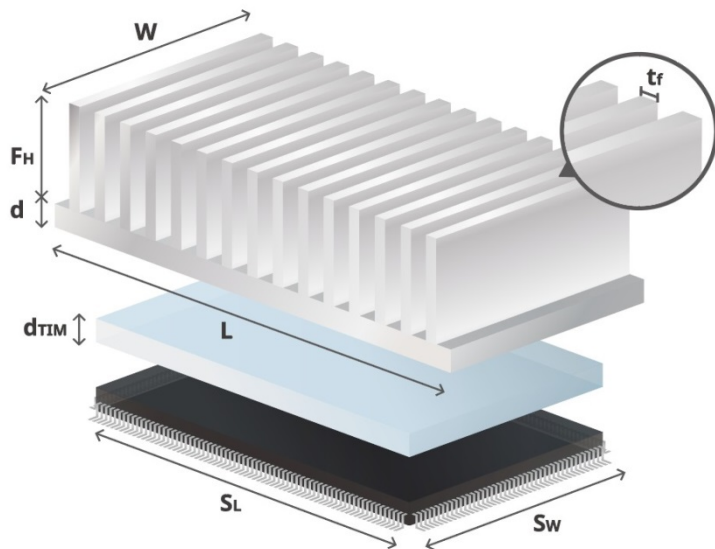
▲ Thermal module size description of flat type heat sink

Name	Annotation
Fin Material	Aluminum or Copper
F_n	Fin Number
t_f (mm)	Fin Thickness
L (mm)	Heat Sink Length
W (mm)	Heat Sink Width
d (mm)	Heat Sink Base Thickness
F_H (mm)	Fin Height
S_L (mm)	Heat Source Length
S_W (mm)	Heat Source Width
P	Power

Nomenclature (Pin type)

▲ Thermal module size description of pin type heat sink

Name	Annotation
Fin Material	Aluminum or Copper
F_n	Fin Number
n_L	Fin Number of L-axis
n_W	Fin Number of W-axis
L_f (mm)	Fin Thickness of L-axis
W_f (mm)	Fin Thickness of W-axis
L (mm)	Heat Sink Length
W (mm)	Heat Sink Width
d (mm)	Heat Sink Base Thickness
F_H (mm)	Fin Height
S_L (mm)	Heat Source Length
S_W (mm)	Heat Source Width
P	Power

Nomenclature
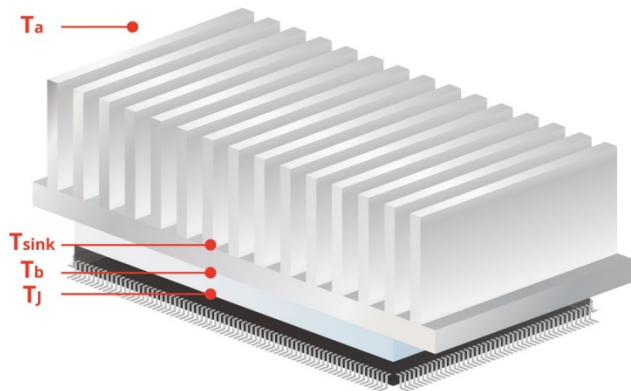
▲ Thermal module temperature description of flat type heat sink
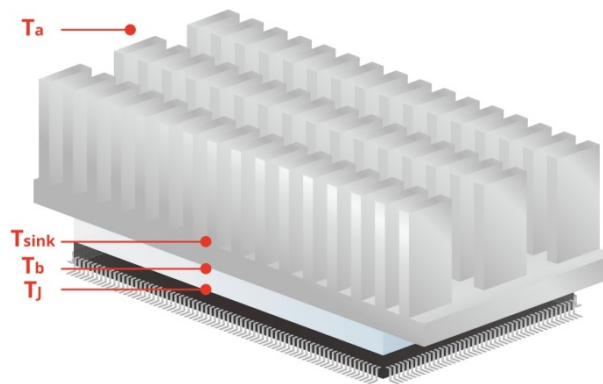
▲ Thermal module temperature description of pin type heat sink

Name	Annotation
T_a (℃)	Ambient Temperature
T_{sink} (℃)	Heat Sink Temperature
T_b (℃)	Heat Sink Base Temperature
T_J (℃)	CPU Junction Temperature

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Nomenclature

Name	Annotation
TIMs Type	Thermal pad, Thermal tape, Thermal grease, Thermal putty, Potting Compound
d_{TIM} **(mm)**	TIMs Thickness
K_{TIM} **(W/m.K)**	Thermal Conductivity of TIMs

Name	Annotation
A_{fin} **(m^2)**	Fin total area
K_S **(W/m.K)**	Thermal Conductivity of Heat Sink
A_{heat} **(m^2)**	Heat Source Area

Operation Procedure

STEP 1 — **Heat Sink Info**

If you have a heat sink, you need to choose your heat sink type and fill in all the information of the heat sink include tf, F_n, L, W, d, F_H and Fin Material (currently are copper or aluminum)…

STEP 2 — **Heat Source Info**

Please fill in all the information of your heating chip (heat copper block) include S_L, S_W, P and the ambient temperature.

Operation Procedure

STEP 3   **Request**

You also need to fill TIMs Type (currently are thermal pad, thermal tape, thermal grease, thermal putty, potting compound), d_{TIM}, K_{TIM}.

When you press the [calculate] button, **we will recommend the thermal interface material you need**. You can clearly view the features of each product, and click the [more detail] to learn more about the product.

Operation Procedure

STEP 4 **Calculate**

Press the [calculate] button, all the temperature points such as T_{sink}, T_b, T_J will be calculated and fin area A_{fin}, heat sink thermal conductivity K_S, heat source area A_{heat} will be calculated as well.

If you find that the calculated target temperature does not match the actual target temperature you need to achieve, please modify the TIMs data in the [Request] field.

If you want to clear all the information, you may push the [clear] button.