A thermal dissipating device includes a base, at least a heat pipe, a plurality of fins and a fan. The heat pipe is fixed on the base and has an end extending outwards. The fins are fitted to the heat pipe. The fan has an airflow entering side and an airflow exiting side along an airflow path. The fan is provided beside the fins and has the airflow entering side or the airflow exiting side facing gaps between the fins. The fins have hollow portions on edges proximal to the fan, and a buffer space is formed between the fins and the fan. Therefore, the buffer space increases a distance between the fins and the fan to reduce the resistance on the airflow entering the fins that may reduce the noise of the airflow of the fan.
THERMAL DISSIPATING DEVICE

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention
[0002] The present invention relates generally to a thermal dissipating technique, and more particularly to a thermal dissipating device.
[0003] 2. Description of the Related Art
[0004] Conventional thermal dissipating devices have many types. The first type is heat sink, which has a substrate with a plurality of upright fins, providing a large surface area by the fins to get a greater thermal dissipating performance. The second type includes a heat pipe mounted on a substrate and a plurality of fins fitted to the heat pipe. The heat pipe transfers the heat of the substrate to the fins for thermal dissipation.

[0005] To increase the thermal exchange rate of the fins, the conventional dissipating device usually is provided with a fan beside the fins to provide airflow through gaps between the fins that may get a greater thermal exchange rate.

[0006] However, the fan usually is very close to the fins that may cause air turbulence when the airflow enters the fins. In addition, it will make a loud noise also when the airflow enters the fins. The pressure at a back side of the fan is higher that the fin and the fan have less airflow therethrough.

SUMMARY OF THE INVENTION

[0007] The primary objective of the present invention is to provide a thermal dissipating device, which has lower noise, greater airflow and greater thermal dissipating performance.

[0008] According to the objective of the present invention, a thermal dissipating device includes a base, at least a heat pipe, a plurality of fins and a fan. The heat pipe is fixed on the base and has an end extending outwards. The fins are fitted to the heat pipe. The fan has an airflow entering side and an airflow exiting side along an airflow path. The fan is provided beside the fins and has the airflow entering side or the airflow exiting side facing gaps between the fins. The fins have hollow portions on edges proximal to the fan, and a buffer space is formed between the fins and the fan. Therefore, the buffer space increases a distance between the fins and the fan to reduce the resistance on the airflow entering the fins that may reduce the noise of the airflow of the fan.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. 1 is a perspective view of a first preferred embodiment of the present invention;
[0010] FIG. 2 is an exploded view of the first preferred embodiment of the present invention;
[0011] FIG. 3 is a top view of the first preferred embodiment of the present invention;
[0012] FIG. 4 is a perspective view of a second preferred embodiment of the present invention, showing the diffusion plate;
[0013] FIG. 5 is an exploded view of the second preferred embodiment of the present invention; and
[0014] FIG. 6 is a top view of the second preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0015] As shown in FIG. 1 to FIG. 5, a thermal dissipating device 10 of the first preferred embodiment of the present invention includes a base 11, a plurality of heat pipes 13, a plurality of fins 15 and a fan 17.

[0016] The heat pipes 13 have ends fixed on the base 11 and the other ends extending outwards and upwards. The fins 15 are fitted to the heat pipes 13.

[0017] The fan 17 is provided beside the fins 15. The fan 17 has an airflow entering side 171 and an airflow exiting side 172. The fan 17 has the airflow entering side 171 or the airflow exiting side 172 facing gaps between the fins 15. In the present embodiment, the fan 17 has the airflow entering side 171 facing the fins 15.

[0018] The fins 15 have hollow portions at edges thereof proximal to the fan 17. A buffer space 16 is defined between the fins 15 and the fan 17. The fins 17 have curved edges proximal to the fan 17. Centers of the curved edges are distal to the fan 17 and opposite sides thereof are proximal to the fan 17.

[0019] In operation of the thermal dissipating device 10 of the present invention, the fan 17 is driven to provide an airflow, and the airflow flows through the fins 15 and the buffer space 16 before being sucked into the fan 17 that may increase the thermal dissipating performance.

[0020] The feature of the present invention is the buffer space 16 between the fins 15 and the fan 17 that the airflow has less resistance when it flows through the fins 15. The less resistance on airflow makes a greater airflow entering the fan 17. The buffer space 16 reduces the noise of the fan 17 and the airflow entering the fins 15. The curved edges of the fins 15 may further reduce the noise.

[0021] In addition, the fan 17 may has the airflow exiting side 172 facing the fins 15. Such structure has the same function and action as described above, so we'll not describe it again. The hollow portions of the fins may buffer the airflow of the exiting side to reduce the noise and resistance.

[0022] As shown in FIG. 4 to FIG. 6, a thermal dissipating device 20 of the second preferred embodiment of the present invention includes a base 21, a plurality of heat pipes 23, a plurality of fins 25 and a fan 27.

[0023] The heat pipes 23 have middle sections fixed on the base 21 and opposite ends extending outwards and upwards to opposite sides respectively. The fins 25 are classified into two sets 251 and 252 fitted to the opposite ends of the heat pipes 23 respectively. The fan 27 is located between the first set of the fins 251 and the second set of the fins 252. The fins 25 have hollow portions on edges proximal to the fan 27. Two buffer spaces 26 are defined between the fan 27 and the first and second sets of the fins 251 and 252 respectively.

[0024] The first set of the fins 251 and the second set of the fins 252 have curved edges proximal to the fan 27 respectively. Centers of the curved edges are distal to the fan 27 and opposite sides thereof are proximal to the fan 27.

[0025] The first set of the fins 251 and the second set of the fins 252 of the second preferred embodiment of the present invention enclose both of the airflow entering side and the airflow exiting side of the fan 27 so that the airflow on opposite sides of the fan 27 may be used for thermal dissipation to provides a greater thermal dissipating performance. The buffer spaces 26 have the same function of the buffer space 16 of the first preferred embodiment. The function and action of the second preferred embodiment are as same as the first preferred embodiment, so we’ll not describe them again.
The description above is a few preferred embodiments of the present invention and the equivalence of the present invention is still in the scope of the claim of the present invention.

What is claimed is:

1. A thermal dissipating device, comprising:
   a base;
   at least a heat pipe fixed on the base and having an end extending outwards;
   a plurality of fins fitted to the heat pipe; and
   a fan, which has an airflow entering side and an airflow exiting side along an airflow path, provided beside the fins and having one of the airflow entering side and the airflow exiting side facing gaps between the fins;
   wherein the fins have hollow portions on edges proximal to the fan, and a buffer space is formed between the fins and the fan.

2. The thermal dissipating device as defined in claim 1, wherein the fan has the airflow entering side facing the gaps between the fins.

3. The thermal dissipating device as defined in claim 2, wherein the fins have curved edges proximal to the fan.

4. The thermal dissipating device as defined in claim 3, wherein centers of the curved edges are distal to the fan and opposite sides thereof are proximal to the fan.

5. The thermal dissipating device as defined in claim 4, wherein there are a plurality of the heat pipes, each of which has a middle section fixed on the base and opposite ends extending outwards and upwards respectively to fit the fins thereon respectively, wherein the fins, which are located at a side of the base, are defined as a first set of the fins, and the other fins, which are located at the other side of the base, are defined as a second set of the fins, and the fin is located between the first set of the fins and the second set of the fins.

6. The thermal dissipating device as defined in claim 5, wherein the first set of the fins and the second set of fins have curved edges proximal to the fan respectively.

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