Heatsink and Fan/Heatsink for IBM 6x86 Microprocessors

Application Note

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Revision Summary: This revision contains heatsink information for running the IBM 6x86 microprocessor at 150 MHz

Introduction

This application note lists several heatsinks and fan/heatsinks for various internal clock frequency IBM 6x86 microprocessors. System board designers may find one of these devices appropriate to keep the microprocessor's case temperature within 75 degrees C limit. The heatsink and fan/heatsink for IBM 6x86 microprocessors are selected assuming the system ambient environment would not exceed 45 degrees C. It is imperative that appropriate thermally conductive interface material be used between the heatsink bottom surface and the top of the package to create a proper thermal path. Although the clip and spring are the suggested means to obtain the proper mechanical bond between the heatsink or the fan/heatsink and the IBM 6x86 microprocessor, any other means such as thermally conductive epoxies can also be employed to bond. Since there are so many thermal parameters that also affect the overall thermal performance of the system, it is important that once a heatsink or a fan/heatsink is selected, a verification run be performed in the actual system by monitoring case temperature. More than one potential solution for each internal clock frequency is provided. Since available physical space for heat dissipation and air flow varies from system to system, users should select the one which best fits in their system.

Note that a more detailed thermal solution for IBM 6x86 microprocessors is provided in the application note "Selection of Appropriate Thermal Solution for IBM 6x86 Microprocessors" document # 40209. The user may also refer to application note "System Level Design Considerations for IBM 6x86 Microprocessor Thermal Management" document # 40216.

Heatsink and Fan/Heatsink Solutions for the IBM 6x86 Microprocessors

Internal Clock Freq. in MHz	Overall Size of Heatsink (in) LxWxH	Vendor	Part Number	Min. air Flow Over Heatsink in ft/min[1]
100	2.484 X 2.66 X 1.5	WAKEFIELD	779L-150AB	150
100	2.3 X 2.3 X 1.1	AAVID	339021B	250
100	2.099 X 2.099 X 1.75	THERMALLOY	2339B	300
100	2.3 X 2.3 X 0.84	AAVID	338721B[3]	350
100	2.1 X 2.643 X 0.65	THERMALLOY	2350B[4]	400
100	2.138 X 4.87 X 0.4	IERC	PS507B	400
100	2.138 X 2.28 X 1.25	IERC	PS519B[5]	400
100	2.1 X 1.86 X 1.0	WAKEFIELD	789-100AB[4]	500
100	2.1 X 1.91 X 1.0	WAKEFIELD	798-100AB[4]	500
110	2.3 X 2.3 X 1.1	AAVID	339021B[3]	300
110	2.3 X 2.3 X 0.84	AAVID	338721B[3]	400
110	2.099 X 2.099 X 1.75	THERMALLOY	2339B[4]	400
110	2.1 X 2.643 X 0.65	THERMALLOY	2350B[4]	500
110	2.138 X 2.28 X 1.25	IERC	PS519B[5]	500
110	2.138 X 4.87 X 0.4	IERC	PS507B[5]	500
110	2.1 X 1.91 X 1.0	WAKEFIELD	798-100AB[4]	600
110	2.1 X 1.86 X 1.0	WAKEFIELD	789-100AB[4]	600
120	2.484 X 2.66 X 1.5	WAKEFIELD	779L-150AB[2]	200
120	1.885 X 1.9 X 0.65	THERMALLOY	2335B[4]	800
133	1.96 X 1.96 X 1.01[7]	ORYX INT.	T15-4515C1SB[8]	FAN/HEATSINK
133	2.0 x 2.0 x 0.98	CHIP COOLERS	HTS114B	FAN/HEATSINK
133 & 150	2.484 X 2.66 X 1.5	WAKEFIELD	779L-150AB[2]	300
133 & 150	2.536 X 2.536 X .785	AAVID	353155B[3]	FAN/HEATSINK
133 & 150	2.185 X 2.138 X 1.0[7]	IERC	PS520CB/F01[5]	FAN/HEATSINK
133 & 150	2.46 X 2.54 X 1.02[7]	WAKEFIELD	979L-100AB121	FAN/HEATSINK
133 & 150	2.46 X 2.66 X 1.31[7]	WAKEFIELD	879Z-130AB121[8]	FAN/HEATSINK
133 & 150	2.0 X 2.0 X 1.18[7]	SANYO DENKI	109P5412H2026[8]	FAN/HEATSINK
150	2.09 x 1.97 x 1.2	ORYX INT.	TI-5020SBC1	FAN/HEATSINK

Footnotes to Table

1. If the system cannot provide the indicated air flow over the heatsink fins, an external fan, such as the one use in the fan/heatsink assembly, that can deliver the indicated air flow, can be mounted on top of the heatsink.
2. Wakefield Engineering provides a clip that can be attached to the socket 5.
3. Clip 113800F00000 of Aavid Thermal Technologies can be employed to attach the heatsink to socket 5.
4. Spring PF33 of Thermalloy, Inc. can be employed to attach the heatsink to the socket 5.
5. Clip SC5 of IERC can be employed to attach the heatsink to the socket 5.
6. A fan/heatsink assembly, 2335B-42S-PF33 (20675B) may be substituted.
7. The dimension includes the fan and heatsink assembly.
8. The part number include the fan, heatsink and clip in the assembly.

Heatsink Suppliers

Aavid Thermal Technologies **
One Kool Path
P.O. Box 400
Laconia, NH 03247
Tel. (603) 528-3400
Fax (603) 528-1478

IERC **
135 W. Magnolia Blvd.
Burbank, CA 91502
Tel. (818) 842-7277
Fax (818) 848-8872

Thermalloy Inc. **
2021 W. Valley View
Dallas, TX 75234
Tel. (214) 243-4321
Fax (214) 241-4656

Wakefield Engineering **
60 Audubon Road
Wakefield, MA 01880
Tel. (617) 245-5900
Fax (617) 246-0874

Oryx International Ltd. **
7F, No. 5, Alley 16, Lane 235
Pao Chiao Road, Hsintien City
Taipei, Taiwan. R.O.C.
Tel. 886-2-9141400
Fax 886-2-9142283

Sanyo Denki America **
2612A South Miami Blvd.
Durham, NC 27703
Tel. (919) 598-1680
Fax (919) 598-1744

Cooler Master, Inc. **
115 Fourier Ave
Fremont, CA 94539
Tel. (510 770-8566
Fax (510) 770-0855

Chip Coolers, Inc. **
333 Strawberry Field Rd
Warwick, RI 02886
Tel. (401) 739-7600
Fax (401) 732-6119

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