Attaching the AX1500/AX3500 to a chassis

Application Note **AN61220**

Introduction

This note describes the procedure to be followed for removing the original heat-sink provided with the AX1500/AX3500 controllers, and subsequent mounting on a chassis

Assembly description

The AX1500/AX3500 can be attached to a flat metal chassis to improve heat dissipation.First the blue heat sink, which is used as a standard, is removed by removing the screws holding it.

Next, in order to avoid that the PCB tracks and the terminals on the back of the board make contact with the chassis, it is necessary to interpose a metal bar (interposer) between the board and the chassis. Its thickness has to provide sufficient clearance between the board and the PCB.

The back of the PCB has a large exposed copper area just under the power MOS, and it is critical that the interposer is insulated, for example by thick anodization or by a layer of thermal conducting pad.

Failure to do so will cause short the power MOS and cause permanent damage to the board.

Ordinary thermal grease is not an insulator and will not prevent shorts.

The thermal contact between the power copper area under the power MOS and the interposer must be adequate, as well as the contact between the interposer and the chassis. If the planarity is not sufficient to guarantee full contact, then a thermal pad should be used.

Precautions to observe

There ar a total of seven screws for the AX1500 and eight for the AX3500:

- four corner screws.
- 2 heat-sink screws for the AX1500 and 3 for the AX3500.
- 1 screw for the power regulator.

Insert a plastic washer under the head of the heat-sink and corner screw or otherwise the screw heads will cut into the PCB insulation and make contact with the underneath copper and cause shorts.

Mount the voltage regulator screw with the head under the PCB to minimize its protrusion and avid it comes in contact with the chassis. If clearance is a problem use a plastic screw.

If mechanical vibrations are expected, then use a plastic shoulder washer to keep the body of the screw centered an avoid that it into the side of the hole.

Appropriate spacers go under the four corner screws to maintain the PCB flat; the PCB cannot be bent as result of the assembly.These particular screws do not need to be excessively tightened; plastic 6-32 screws can be used for best results. The screws which are critical for a good thermal transfer are the heat-sink ones.

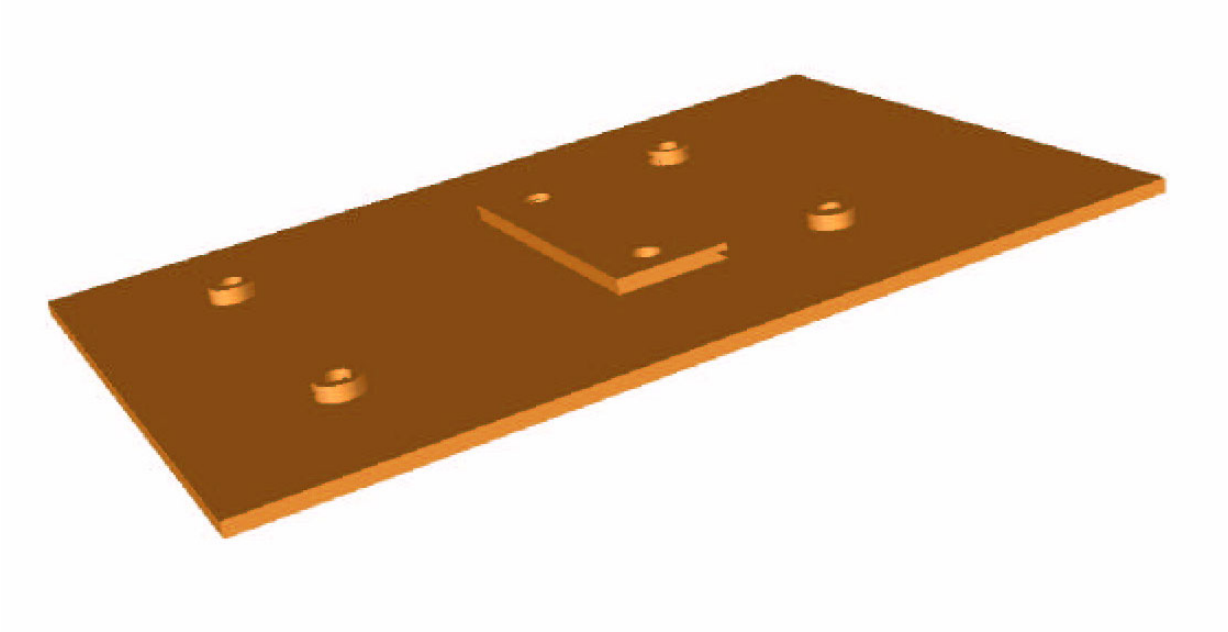

FIGURE 1. 3D view of the chassis, the interposer and the corner washers

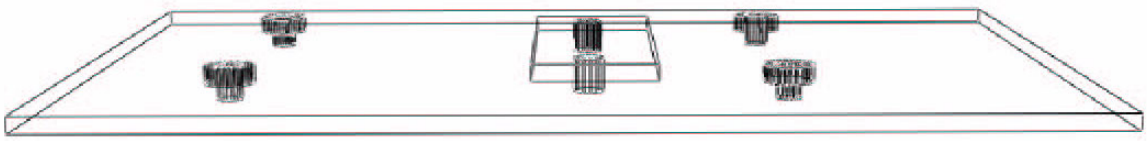

FIGURE 2. Wireframe view