Application note

Number	43
Date	18-Mai-2001
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Subject	**Mechanical Specification ETX Module and Backplane Layout** **(Excerpt from the ETX Component SBC™ Specification)**
Related Products	All ETX Component SBC™ products

Date	Edited by	Alteration to previous document revision
18.05.01	C. Hoch	Initial release
25.04.02	D. Gunter	English proofreading
23.08.02	H. Bruhn	Changed to Kontron style

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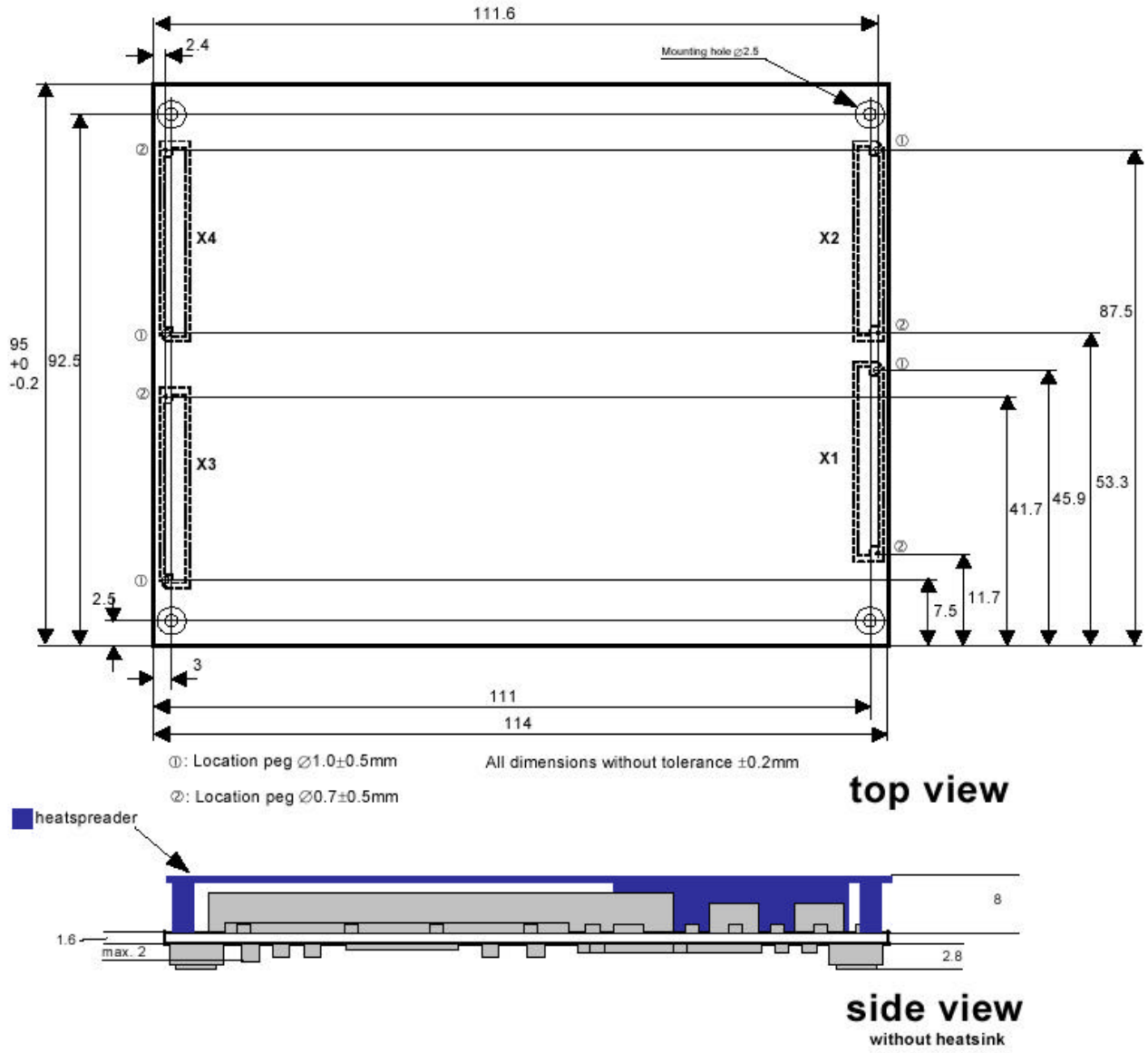
2. MECHANICAL SPECIFICATION OF ETX COMPONENT SBC™



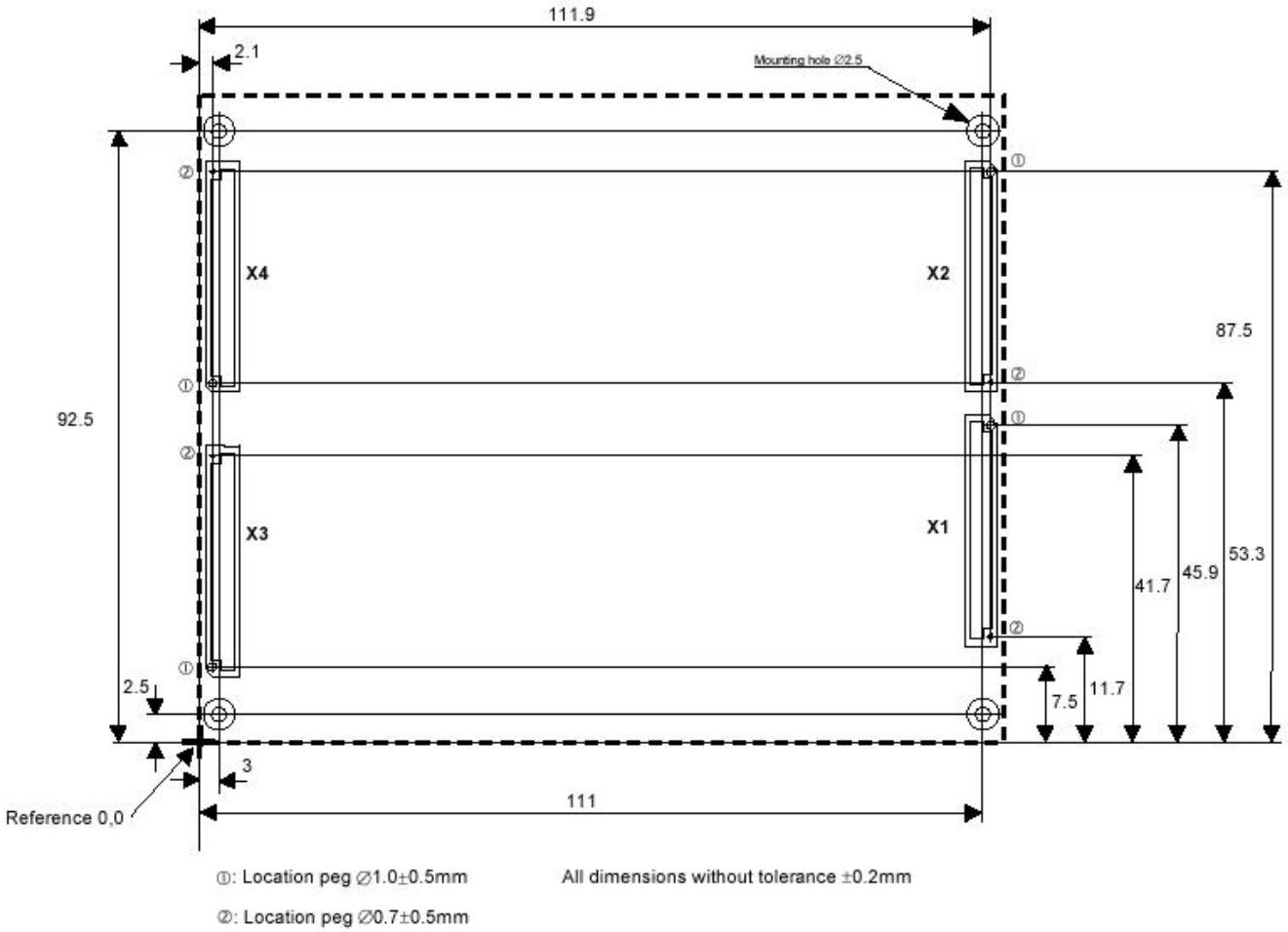
An ETX module, including the heat spreader plate, has a maximum thickness of approximately 12mm. The top components are up to 8mm high and the bottom components are up to 2mm high. Headers X1 to X4 (FX8-100P-SV) on ETX are 2.8mm high and connect to the corresponding receptacles on the baseboard. See Section 3.2 for baseboard receptacle specifications.

CAUTION: DO NOT USE THIS DRAWING FOR BASEBOARD LAYOUT. SEE SECT. 3.1

NOTE: The height (Y) dimension is 100mm (instead of 95mm) on some ETX Component SBC's. This does not change the relative location of the connectors and mounting holes. The 100mm height modules are interchangeable with 95mm modules.

3. MECHANICAL SPECIFICATION OF BACKPLANE

3.1. Backplane layout

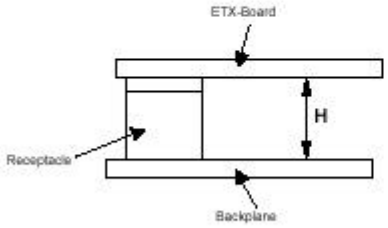


The outline shown here is for modules with a Y dimension of 95mm. Note that in order to accommodate both 95mm and 100mm ETX modules, the 95mm outline shown here should be expanded by 2.5mm on the top and 2.5mm on the bottom.
The relative mounting holes and connector locations on the 95mm and 100mm modules are the same, only the Y envelope dimension varies. A given baseboard design can accommodate both 95mm and 100mm modules provided sufficient clearance is allowed for the 100mm module.

3.2. Specification of baseboard connector

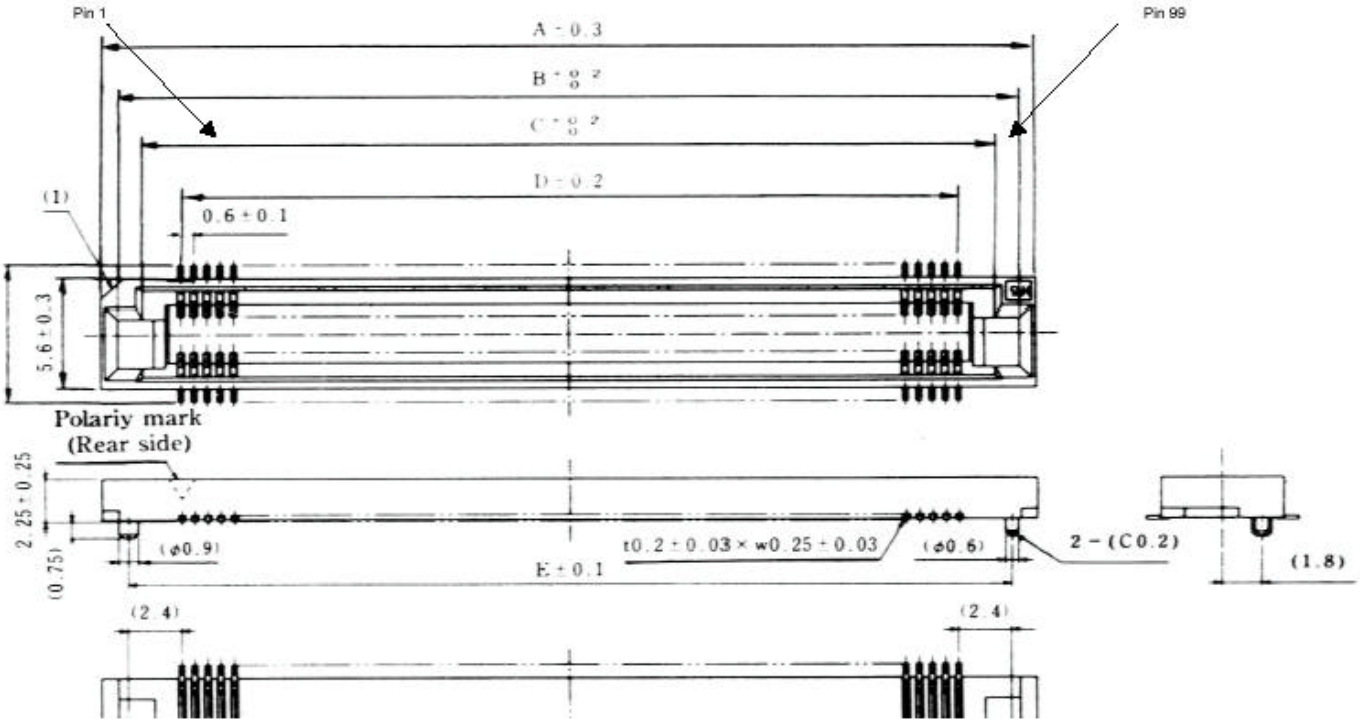
To achieve various stacking heights, the receptacles for ETX baseboards are available in two heights.

Manufacturer	Order number	Resulting height H between backplane and ETX-Board
HIROSE	FX8-100S-SV	3 +0.3/-0.2mm
	FX8C-100S-SV5	9.5 +0.3/-0.2mm

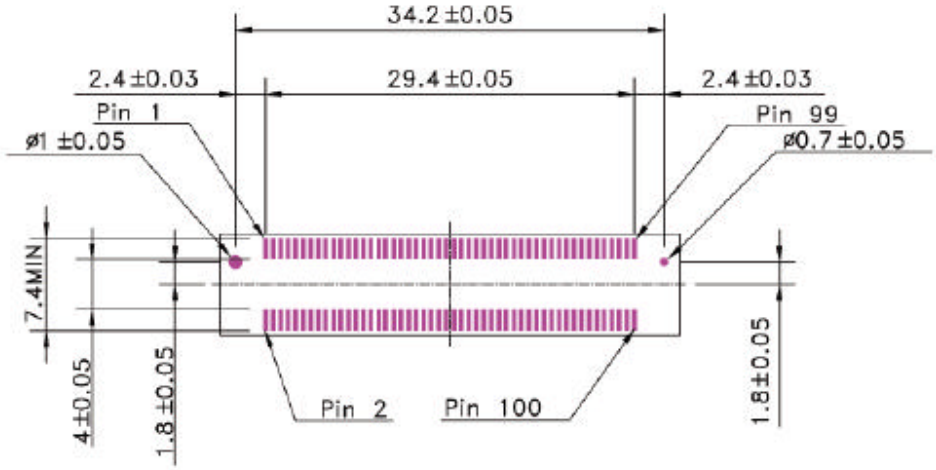


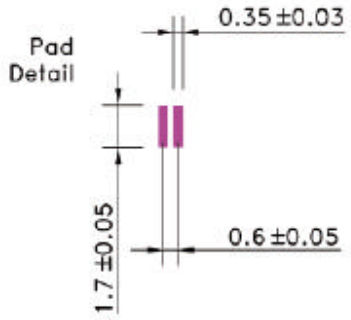
Current capacity	0.4A per pin
Rated voltage	100V AC
Insulation resistance	100MΩ or greater @ 250V DC
Withstand voltage	300V AC r.m.s.
Contact resistance	45mΩ or less @ 100mA DC
Insulation	PPS resin (Light brown, UL94V-0)
Contacts	Phosphor bronze (Contacts and leads – gold plating)

3.2.1. Dimensions of Receptacle FX8-100S



3.2.2. PCB Footprint of Receptacle FX8-100S





4. HEAT SPREADER AND HEAT SINK CONSIDERATIONS

The heat-spreader is a 2mm thick aluminum plate. It provides a thermal interface surface for heat removal from the ETX module. Because of the thickness of the plate, components that must fit under the plate are limited to a height of 6mm unless clearance holes are provided. Clearance holes in the heat spreader plate are permitted for user access purposes (e.g. SO-DIMM removal) or to allow the use of high-profile components up to 8mm high. All hole locations and sizes should be carefully considered so that the mechanical integrity of the heat spreader is maintained.
The heat spreader is thermally coupled to the CPU die or package surface, it may also be coupled to other heat generating devices on the module. The heat spreader is the thermal interface surface for most of the heat generated within the module. The heat spreader is not intended as a heat sink, although it may be suitable for this purpose on low power modules operating under benign conditions. Higher power modules, or higher temperature conditions, will require heat removal devices (e.g. heat sink with fan, heat pipe etc.) to be attached to the heat spreader or be thermally coupled to a chassis.
Thermal dissipation varies considerably among ETX modules and proper heat removal from the heat spreader plate is an essential consideration for any ETX design. For maximum flexibility ETX cooling methods should be secured to as much of the heat spreader plate area as possible, since the location of the CPU may vary among different ETX module designs.

NOTE: Refer to your ETX module product manual for the exact demensions of the heat spreader, for cooling requirements and operating temperature limits for your module.