User's Manual

VTT-HS-8J064

SMARC Module Heat Sink Datasheet

Revision History

Revision	Date	Changes from Previous Revision
1.0	2015/7/13	Initial Release

USER INFORMATION

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Embedian, Inc.

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Using this Manual

This guide provides information about the *SMARC Module Heat Sink Datasheet* for *Embedian i.MX6* dual core, *i.MX6* quad core based and future *SMARC* modules that need heat sink solution.

Conventions used in this guide

This table describes the typographic conventions used in this guide:

This Convention	Is used for
Italic type	Emphasis, new terms, variables, and document titles.
`monospaced type`	Filenames, pathnames, and code examples.

Embedian Information

Document Updates

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Contact Information

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1 Introduction

The *VTT-HS-8J064 SMARC Module Heatsink* is a complete thermal solution. Heatsink is mounted to the *SMARC* carrier board by means of 4 screws of *M2.5 x12mm* thread each. The screws can be mounted from the top. There are additional *M3* threaded holes for attaching a fan to the heat sink, if required.

Not all *SMARC* modules from *Embedian* require heat sink spreader. This *VTT-HS-8J064 SMARC Module Heatsink* is designed especially for *i.MX6* dual core and quad core that runs multimedia applications and for future higher end *SMARC* modules.

2 Technical specifications

The following table shows the technical specifications of the heatsink.

Material	Aluminum alloy AL6063-T5	Remarks
Coating	Black anodized	
Thermal Conductivity	190 to 221 W/(m-K)	Temperature Range: 40°C to 100°C
Weight	40g	
TIM, Thermal Conductivity	6.0W/(m-K)	TIM: Thermal interface material (Fujipoly GR-Hm)
TIM, Flame Rating	UL 94V-0	
TIM, Volume Resistivity	0.1 Ohm-meter	
TIM, Dielectric Constant	26.7 @ 1000 Hz	
TIM, Dielectric Breakdown Voltage	19000V	
TIM, Continuous Use Temperature	-40°C to +280°C	
TIM, Density	3.7 g/cc	
TIM, Tensile Strength	0.3 MPa	
TIM, Hardness Bulk Rubber	26 ~ 52 (Shore C)	

Material	Aluminum alloy AL6063-T5	Remarks
Thermal resistance (Module-Alu)	TBD	Please note that the temperature of the module is measured by the on-module thermal sensor.
Thermal resistance (Alu-Ambient without fan)	< 4.40 °C/W	
Thermal resistance (Alu-Ambient with fan)	< 1.80 °C/W	Test fan details: Dimensions: 40mmX40mmX10.5mm (LxWxH) Speed: 4200 RPM Air Flow: 4.2 CFM

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3 Heatsink dimensions

The following drawings illustrate the mechanical dimensions of the heatsink. All measurements are in millimeter (mm).
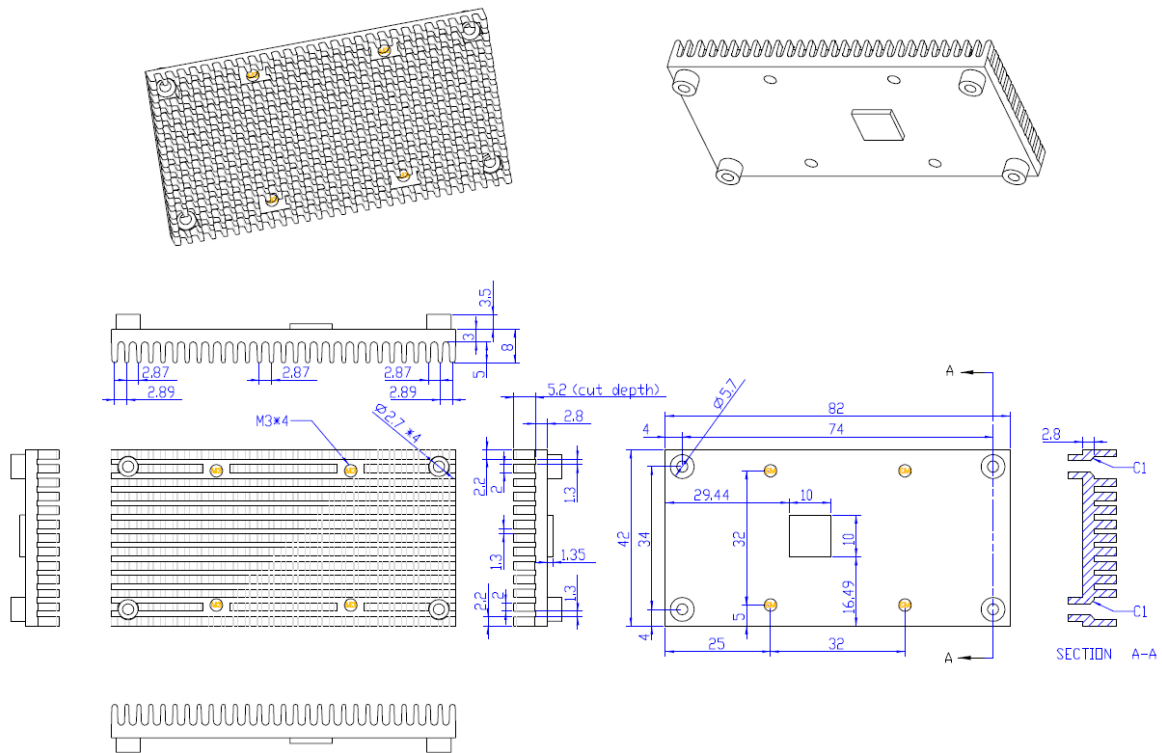
4 Assembly

Assembly must be done very carefully since putting the heatsink in a wrong way will damage the *SMARC* module or may prevent the system from working properly. The illustration shown below represents how to attach the heatsink solution.

4.1 Assembly procedure

The following procedure demonstrates how to attach the *VTT-HS-8J064 SMARC Module Heatsink* to the SMARC module to complete the heatsink solution. Please read the procedure very carefully to ensure that the module does not get damaged. Necessary precautions should be taken to avoid the electrostatic charges.
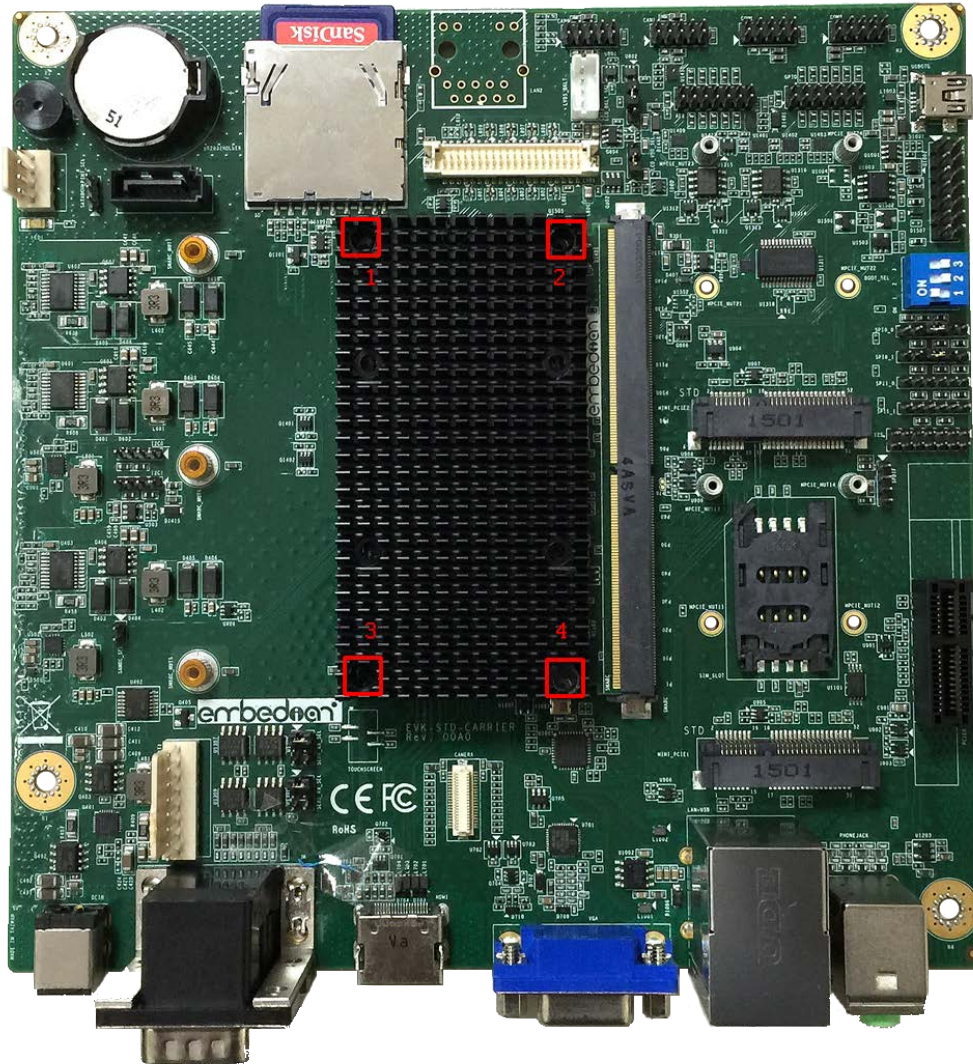
9

1. Clean the processor's top surface using an anti-static cloth.
2. Install SMARC CPU module to *SMARC* carrier board MXM 3.0 connector at 30 degree angle.
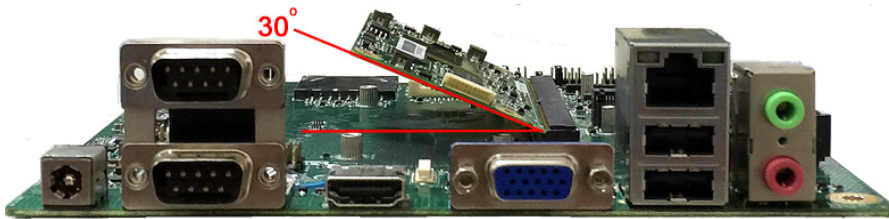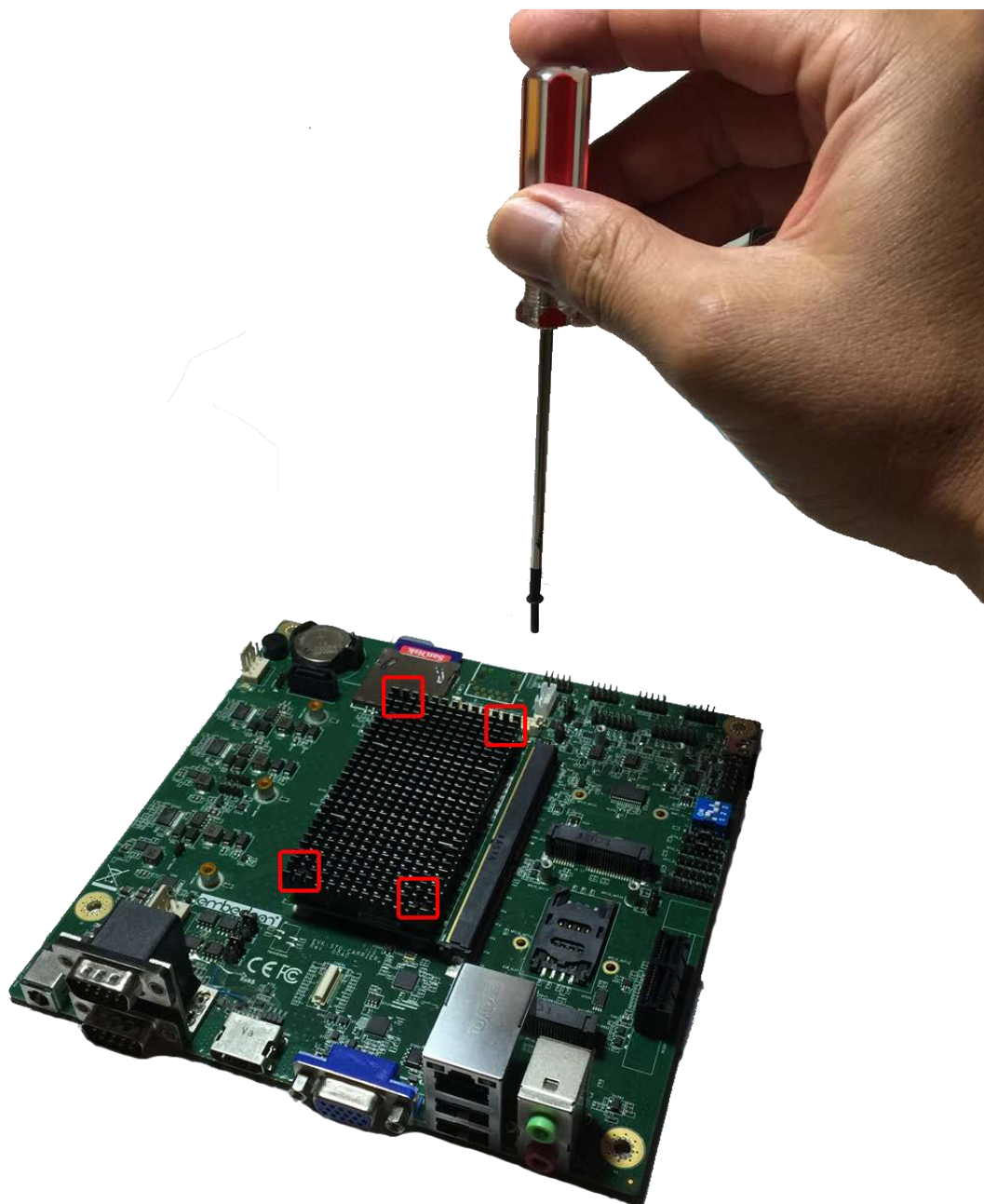

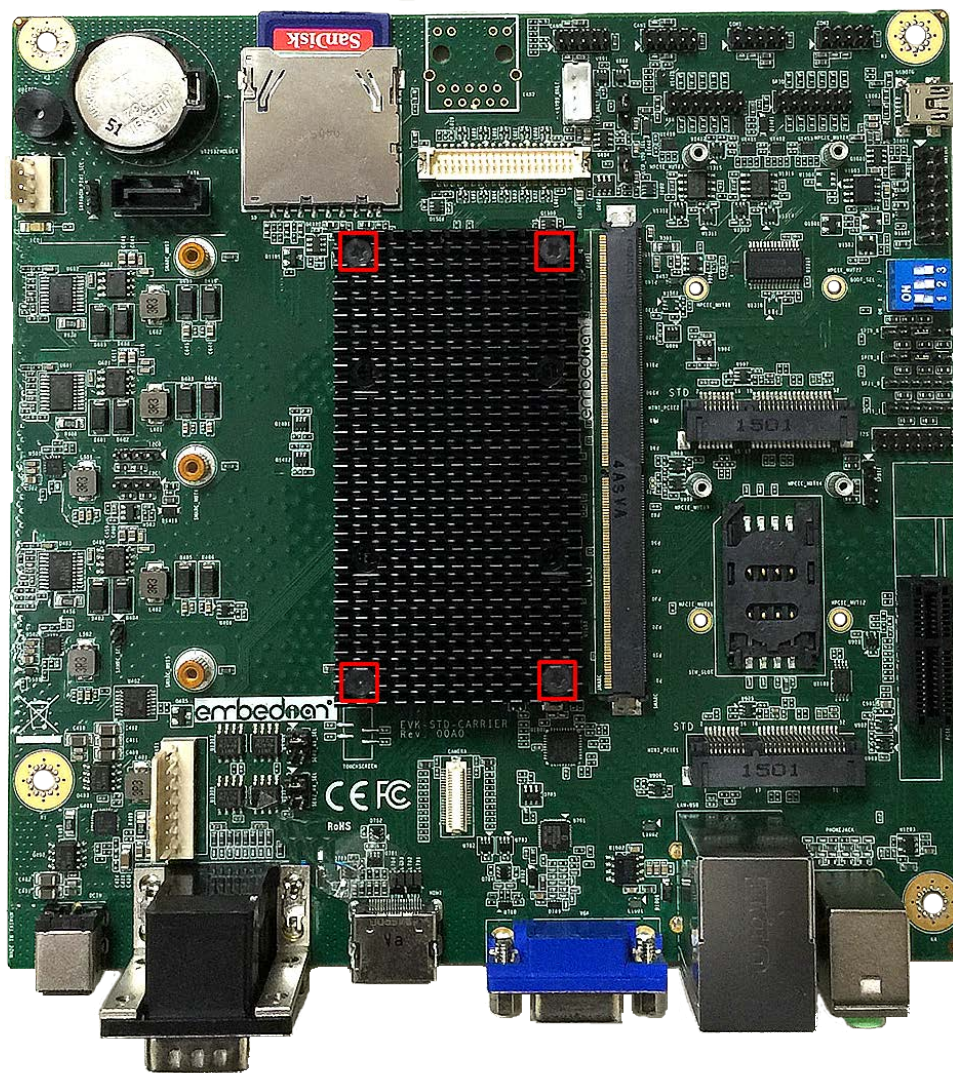3. Carefully remove the plastic foil from the TIM.
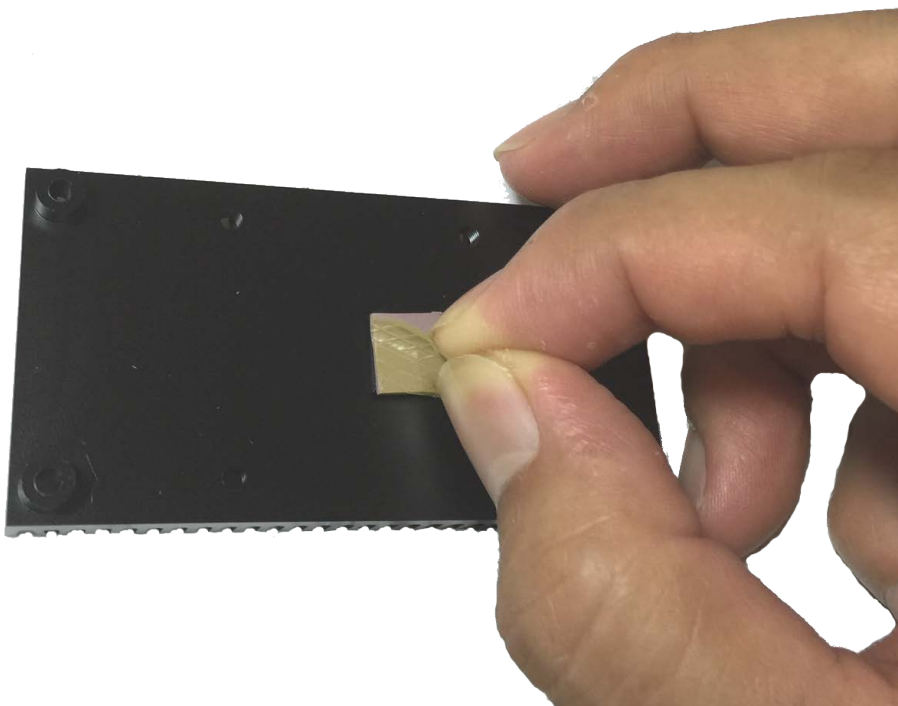
4. Carefully align the mounting holes {1}, {2}, {3}, and {4} on the heatsink to be in-line with fasteners available on the *SMARC* carrier board. Place the heatsink on the system.

5. Use 4 units of M2.5 12mm sized screws to affix the heatsink together with the system.

6. Done. The system is now ready for use.

7. For application which results in the prolonged overheating of the processor, either due to environmental condition (like higher ambient temperature) or due to very high computational power; the DC fan can be mounted on the top of the *VTT-HS-8J064 SMARC Module Heatsink* using M3 screws (4 units). The mounting holes for DC fan are compatible to *FAD1-04010BBLW11* from *Qualtek Electronics* and is available from Digikey (P/N: *Q608-ND*).

Below shows the 3D diagram for mounting a fan.
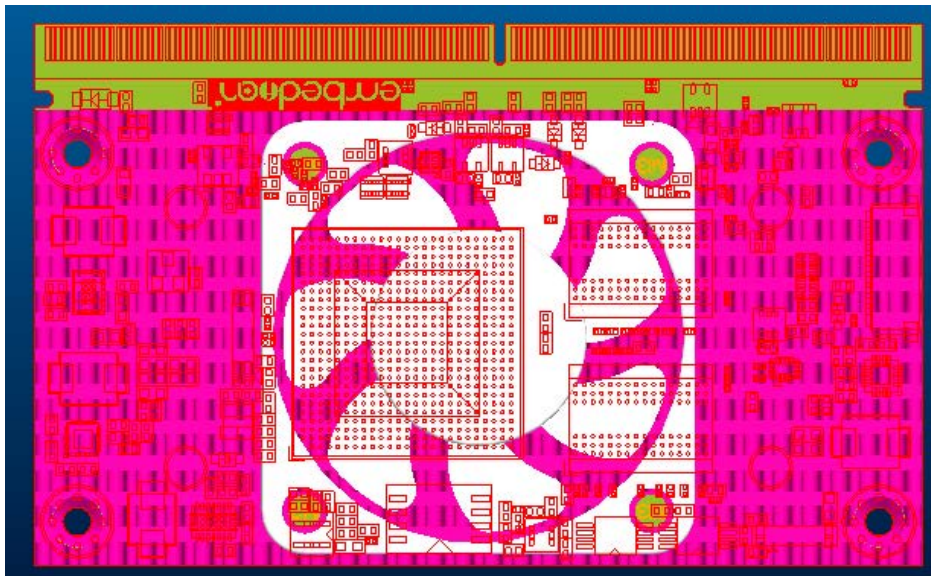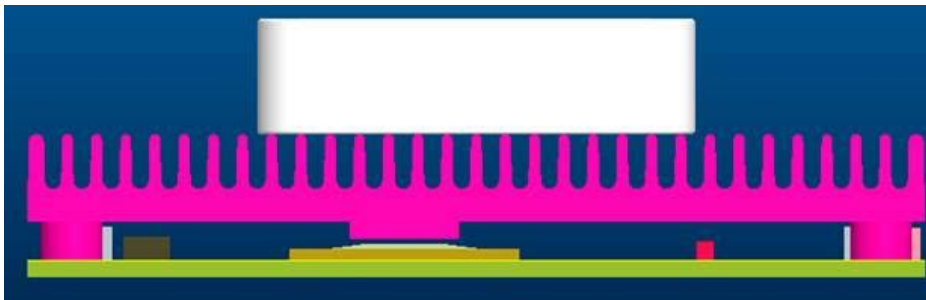
For the majority of the end applications, an additional heatsink fan will not be required.