Toradex

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SMARC Heatsink Passive

HW Datasheet
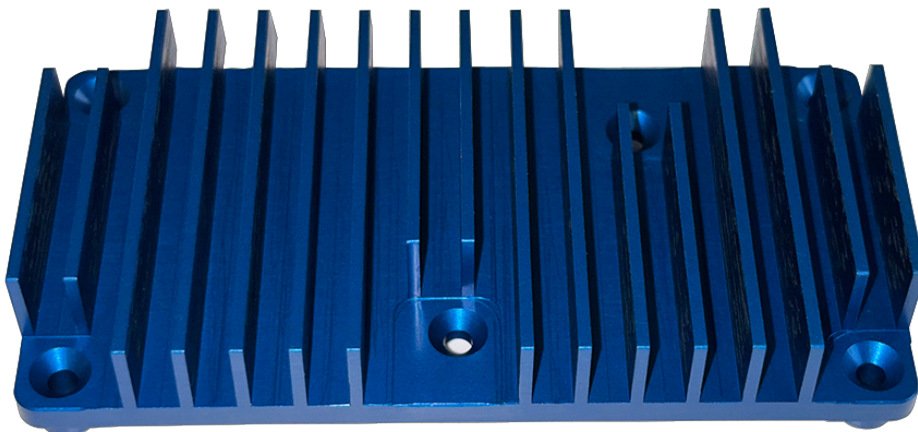
Revision History

Document Revisions

Date	Doc. Revision	Product Version	Changes
30-May-2025	Rev. 0.1	V1.0B	Initial release
15-Sep-2025	Rev. 0.2	V1.0B	Section 2: Update Thermal Resistance estimated values on Table 1

Contents

1   Introduction

The SMARC Heatsink Passive Type 1 is a complete thermal solution. It is mounted to the SMARC carrier board by means of six M2.5×8mm Philips cross slot screws.

1.1   Reference Documents

For detailed technical information about suitable computer modules, please refer to the documents listed below.

1.1.1   Toradex Developer Website – SMARC Computer Modules

https://developer.toradex.com/hardware/smarc-som-family/modules/

1.1.2   Toradex Developer Website – SMARC Carrier Boards

https://developer.toradex.com/hardware/smarc-som-family/carrier-boards/

1.1.3   Thermal Interface Material (TGP 5000) datasheet

The datasheet of the Thermal Interface Material used on the SMARC Heatsink Passive Type 1 can be downloaded by using the following link:

https://datasheets.tdx.henkel.com/BERGQUIST-GAP-PAD-TGP-5000-en_GL.pdf

2   Technical Specifications

2.1   SMARC Heatsink Passive Type 1

Table 1: Technical Specifications

Characteristic	Specification	Remarks
Material	Aluminum alloy AL6063-T5	
Surface	Degreased, blue anodized	
Thermal Interface Material	TGP 5000	Refer to the TGP 5000 Datasheet for specific information on Density, Temperature, and related specifications.
Thermal Conductivity	190 to 221 W/(mK)	Temperature Range: 40°C to 100°C
Weight	Approx 49 grams	
Thermal Resistance (Alu-Ambient)	$\sim$ 8.5°C/W (Estimated)	

3   Compatibility

The SMARC Heatsink Passive is compatible with products from the SMARC family. For detailed information about compatibility with the SMARC Carrier Boards and SMARC Computer on Modules, refer to the product pages:

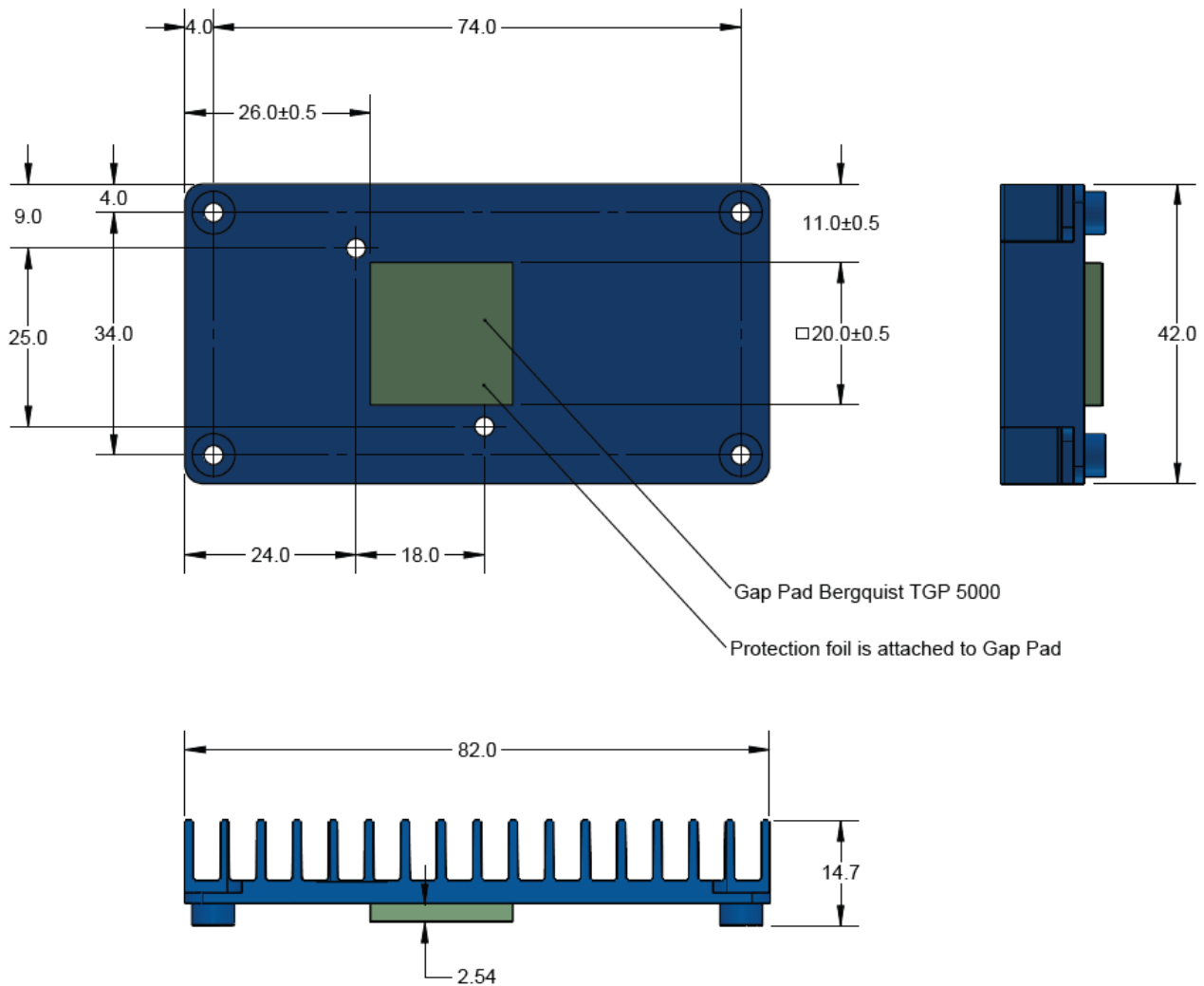https://developer.toradex.com/hardware/smarc-som-family/

4 Mechanical Dimensions

The following drawings illustrate the mechanical dimensions of the SMARC Heatsink Passive. All measurements are in millimeters (mm); the images are not to scale.

4.1 Heatsink Dimensions

Figure 1: SMARC Heatsink Passive Heatsink Dimensions

4.2 General Tolerances

When not explicitly specified, the following tolerances apply to the product:

- Machining dimensions: DIN ISO 2768mK
- Extrusion dimensions: DIN EN12020-2
- Diecasting dimensions: DIN1688-4 GTA1 4

5   Assembly

Assembly must be done very carefully since putting the SMARC Industrial Heatsink in a wrong orientation will damage the SMARC module or prevent the system from working correctly.

5.1   Assembly procedure

The following procedure indicates how to attach the SMARC Heatsink Passive to the SMARC module to complete the heatsink solution. Please read the instructions and follow the procedure very carefully to ensure that the module does not get damaged. Necessary precautions should be taken to avoid the build-up of electrostatic charges.

1. Clean the processor's top surface using an anti-static cloth.
2. Insert the SMARC module in the SO-DIMM socket X1 on the SMARC carrier board.
3. Carefully remove the plastic foil from the TIM.
4. Carefully align the mounting holes of the SMARC Heatsink Passive to be in line with the stand-offs available on the SMARC carrier board. Place the SMARC Heatsink Passive on the system.
5. Use six units of M2.5-sized screws to affix the SMARC Heatsink Passive to the system. The maximum tightening torque specified by the spacers mounted on the SMARC carrier boards is 0.2 Nm.
6. Done. The system is now ready for use.

6   Product Compliance

Up-to-date information about product compliance such as RoHS, CE, UL-94, Conflict Mineral, REACH, etc. can be found on our website at http://www.toradex.com/support/product-compliance/.

7 Storage Requirements

Shelf life is the period of time that a product is expected to remain within its approved product specification while stored under defined conditions.

The most significant factor limiting the SMARC Heatsink Passive's shelf life is the mylar film used to protect the TIM when the product is not assembled on the computer module.

The following table shows the storage requirements and the shelf life of the SMARC Heatsink Passive.

Short periods during which the product is subjected to slightly off-specification environmental conditions will not significantly impact shelf life.

Table 2: Storage Requirements

Storage Measures	Ambient Atmosphere	Storage Temperature	Storage Relative Humidity	Maximum Storage Time
Original packing	Air	22°C to 28°C	40% to 60%	12 months

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