Application Note OSM01

OSM Implementation Guide

Version 002
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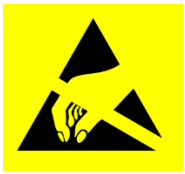
About This Document

When integrating an *Open Standard Module*™ (OSM), defined by *the Standardization Group for Embedded Technology e. V.* (SGeT), several special topics are to be considered. The intention of this document is to give all necessary information for the implementation. The document focuses on the general requirements of the F&S Modules. The latest version of this document can be found at:

www.fs-net.de.

ESD Requirements



All F&S hardware products are electrostatic discharge (ESD) sensitive. All products are handled and packaged according to electrostatic discharge guidelines. Please do not handle or store ESD-sensitive material in ESD-unsafe environments. Negligent handling will harm the product and warranty claims become void.

History

Date	V	Platform	A,M,R	Chapter	Description	Au
14.08.2024	001	All	A	-	Initial Version	UK
08.11.2024	002	-	M	all	Drawing of the shipping tray added, minor adaptions	UK

V Version
A,M,R Added, Modified, Removed
Au Author

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1 Further Information

F&S highly recommend reading the following documents beside the process:

- [1] OSM HW Specification V1.1 (as of 03/05/2022, avaliable at https://sget.org, login required)
- [2] OSM Design Guide 1.0 (as of 04/05/2022, avaliable at https://sget.org, login required)

Notes: *[1] is mainly interesting due to the detailed mechanical specifications.*
[2] contains a step-by-step implementation (schematic) description with circuit examples.

2 Design Process

F&S provides a set of design data (Altium & Cadence), including

- schematic symbols (general & module-specific implementation information)
- footprints (including position references & footprints for the spacers of the F&S heat spreader)
- 3D-models of the modules

to ease the implementation. The latest versions can be found at www.fs-net.de.

2.1 Schematic

As the specific circuits in which the module is embedded are very application-dependent, we refer here to [2] as a first approach.

In case you need support with your individual implementation, please contact support@fs-net.de.

Notes: *In addition to the standard, customized board versions (e. g. changed/adapted pinmux) are also available at F&S.*
F&S also provides a schematic review service for your baseboard implementation. Please send your schematic as searchable PDF to support@fs-net.de.

2.2 Layout

All F&S Modules are assembled single sided. There is no need for the cutout in the baseboard as described in [1], chapter 2.2.2.2.

All F&S modules have a small overhang at the corners of the modules (see the following picture) which must be considered.

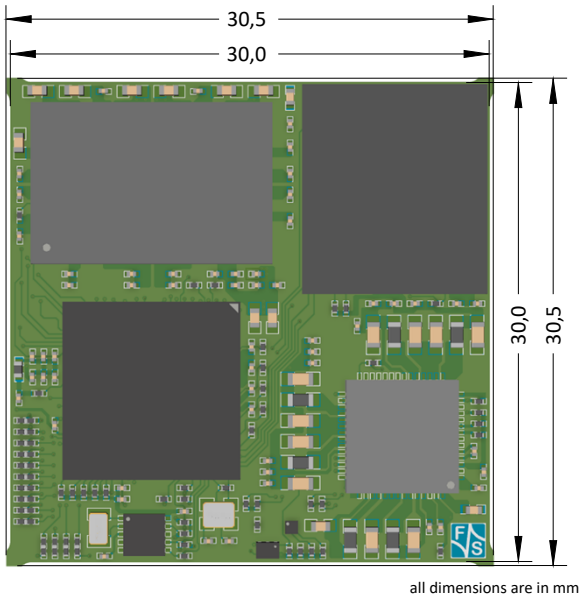


Figure 1: OSM Size S (Overhanging Edges)

The specifications for the design of the footprint on the baseboard are given in [1], chapter 2.1.3.2 (Size-S) & chapter 2.1.6.

Alternatively, one can use the footprint from the design data, provided by F&S. This footprint contains reference marks as assembly information for suitable spacer if one will use the F&S heat spreader.

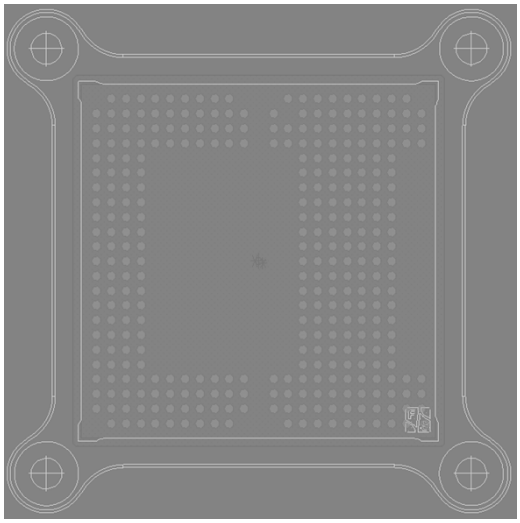


Figure 2: OSM Size S (Footprint, baseboard side)

2.3 Cooling

As basis for a cooling concept, F&S offers a heat spreader (see the following picture). Part number is **MHS.OSM.1**, including:

- 1x heat spreader plate
- 1x thermal interface material (TIM), (15x15x1) mm
- 4x M2.5x6mm DIN965

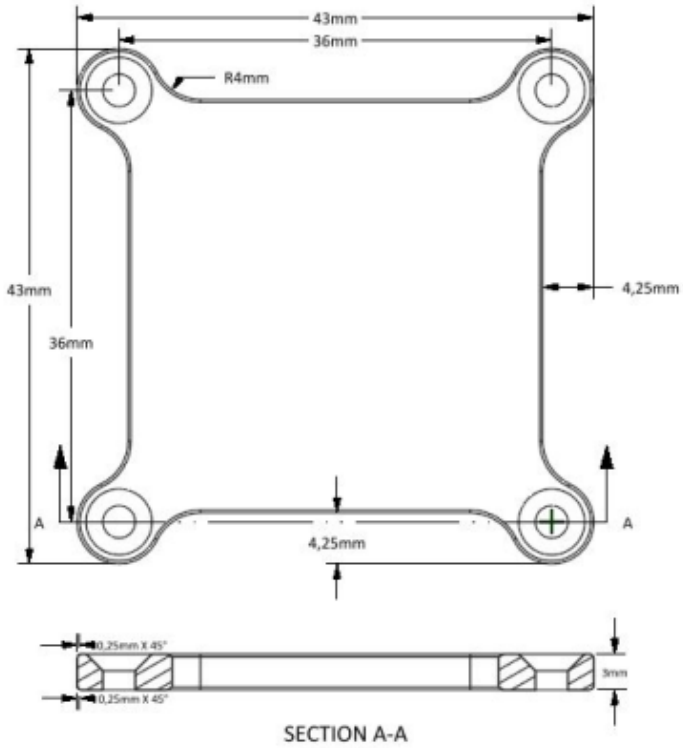


Figure 3: OSM Size S (Heat Spreader Plate, Mechanical Dimensions)

For more information, see document “OSM Cooling Solution”. The latest version can be found at www.fs-net.de.

3 Handling

3.1 Packaging

The OSM modules are shipped in trays. One tray can hold 24 modules. An empty tray is used as top cover.

Please note that the trays are on loan only and must be returned to F&S after use.

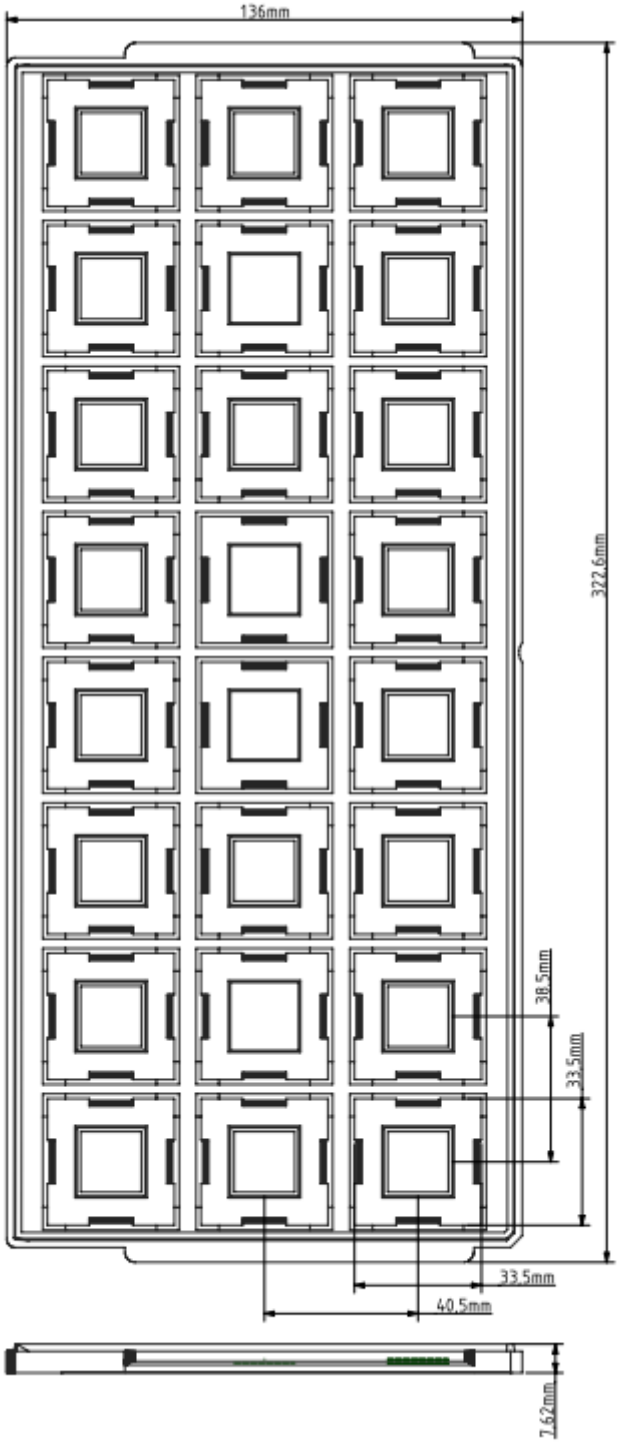


Figure 4: Shipping tray

3.2 Identification

3.2.1 Matrix Code Sticker

All F&S hardware is shipped with a matrix code sticker including the serial number. Enter your serial number here: https://www.fs-net.de/en/support/serial-number-info-and-rma/ to get information on shipping date and type of board.

Figure 5: Matrix code sticker

3.2.2 PCB Information

Due to the lack of space, the pcb information

- name & revision (etch)
- UL marking, batch & date code (soldermask)

are only available in a readable format on the BOT side of the pcb.

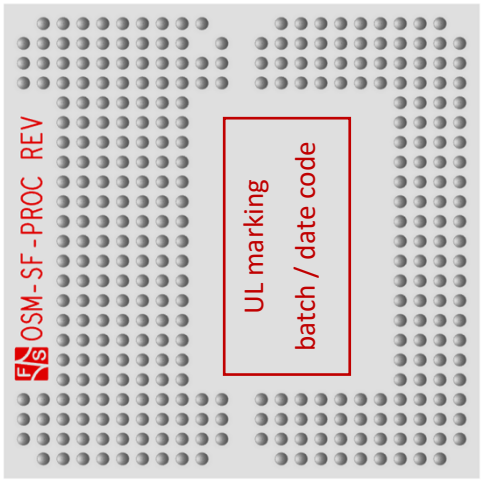


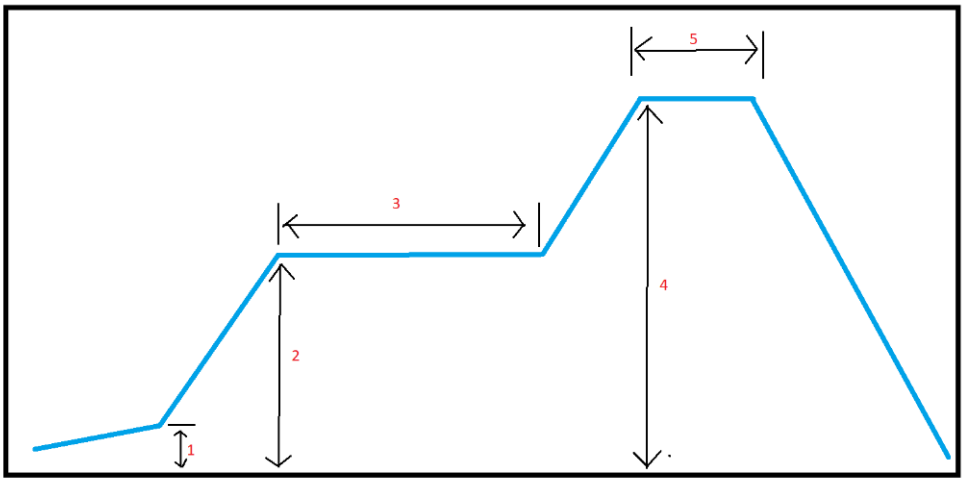
Figure 6: OSM Size S (pcb information, BOT view)

3.3 Production

3.3.1 Soldering Profile

Due to the fact that the exact soldering profile depends on many factors, the following information are to understand as an initial reference [a]. Preconditions:

- dry OSM module (MSL 3)
- only 2 soldering cycles are permitted in total



		min	typ	max
1	SYNC for temperature-equalization (if required)			80 °C [b]
2	Preheat (Temperature)		160 °C	190 °C
3	Preheat (Time)		≤ 60 s	90 s
4	Soldering (Temperature)	225 °C [c]		240 °C
5	Soldering (Time @ 240 °C)		15 s	30 s

Figure 7: Soldering profile (Vapor Phase, example)

[a] The profile is only valid for Vapor Phase-Soldering. Reflow may require higher temperatures. **260 °C must not be exceeded.**

[b] The total time above 60 °C must not exceed 600 s.

[c] FTGA

3.3.2 Orientation

For an optical inspection of the correct orientation one can use the F&S-logo on TOP side as orientation mark. The following picture shows the position of the logo in relation to the contact grid, which is the same for all F&S OSM modules (Size S).

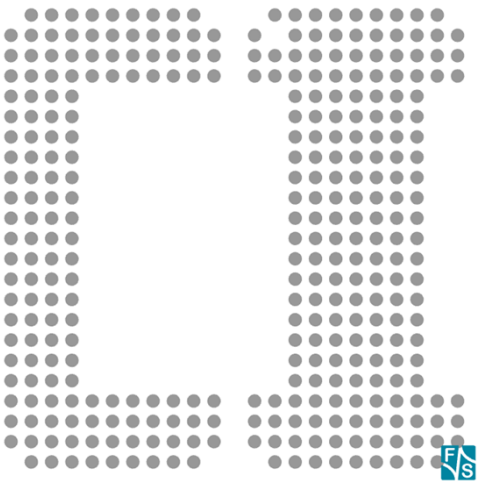


Figure 8: OSM Size S (F&S logo in relation to the contact grid, TOP view)

4 Appendix

Important Notice

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