

# AM625SIP: System In Package Explained

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Texas Instruments has released the new AM625SIP, System-In-Package (SIP), with an LPDDR4 SDRAM integrated in a singular device package. The AM625SIP directly addresses hardware and software robustness, physical size-constraints, and many other challenges that engineers face today. AM625SIP enables a simpler and faster development flow with the processor and LPDDR4 devices integrated in a single package.

The SIP eliminates the time and resources required for connecting an external LPDDR4 device to the processor, simplifying your printed-circuit board (PCB) layout and layer count. This provides a faster time to market with less effort required for PCB layout, simulation, verification and failure analysis. There are also additional benefits to utilizing a System in Package such as simplified design, increased robustness, optimized size/system BOM, and reduced power consumption, which enables faster product development with smaller designs. More information about how our AM625SIP addresses common processor design challenges can be found in the AM625SIP product folder and in the additional resources at the end of this document.

Below are a few frequently asked questions about the AM625SIP and information on how to get started with our System in Package

1. **What is a system in package?**

- a. A system in package is a packaging technology where multiple components are enclosed in a singular package.

2. **What is the AM625SIP?**

- a. AM625SIP is a System in Package derivative of the ALW packaged AM6254 device, with the addition of an integrated 512 MB LPDDR4 SDRAM.

3. **What are the benefits of a system in package**

- a. A system in package can be used to improve system integration by combining multiple components into a singular package, saving on total system BOM with reduced PCB layer count and passive components.
- b. There is reduced engineering effort by eliminating the need for connecting an external LPDDR4 device, enabling a much faster product development cycle while providing a much better chance of first-pass success. Additional benefits of the AM625SIP is the smaller physical size and reduced power consumption which is a significant benefit for systems with area and power constraints.

4. **How can I power the AM625SIP**

- a. [TPS65219](#) PMIC is a cost and space optimized design developed to power the AM62x processor and the principal peripherals. This PMIC has flexible mapping and comes in several factory programmed orderable part numbers to support different use cases

5. **What are the design and Simulation resources I can utilize to develop with AM625SIP?**

- a. Simulation files provided includes IBIS, IBIS-AMI, BSDL, Thermal model and power-estimation tool (PET). These tools can be found [here](#).

6. **What are some example applications for AM625SIP?**

- a. The AM625SIP is an application processor built for Linux development with embedded features such as: dual-display support, 3D graphics acceleration, along with an extensive set of peripherals that make the System in package an excellent choice for a broad range of industrial applications while offering intelligent features and optimized power architecture. Some examples of these are...
  - i. Industrial HMI
  - ii. Medical equipment, patient monitoring, and portable medical devices
  - iii. Smart home gateways and appliances
  - iv. Embedded security: control and access panels

7. **What is the difference between a System in Package (SIP) and a System on Module (SOM)?**
  - a. Both a SIP and SOM aim to enhance overall system integration. However, a SIP is focused on packaging multiple components into a singular physical package such as the AM625SIP with integrated memory. A SOM takes this a step further by integrating other semiconductor devices and passive components like the Power Management IC (PMIC) circuits and other memory devices (eMMC or OSPI) on a small PCB assembly.
8. **How can I get started with the AM625SIP today?**
  - a. There is an AM625SIP evaluation module available today [here!](#) You can begin development with the AM625SIP now using the starter kit & development tools described below.
9. **What development tools are available for the AM625SIP?**
  - a. The [AM62X Academy](#) is available which is designed to simplify and accelerate AM625SIP development. Additionally, we have the [CCSTUDIO](#) which is an integrated development environment for TI processor which comprises a suite of tools used to develop and debug embedded applications.

### **Additional Resources**

- Texas Instruments, [AM625SIP](#) product folder.
- Texas Instruments, [SK-AM62-SIP](#) tool.
- Texas Instruments, [How the AM625SIP Processor Accelerates Development by Integrating LPDDR4](#) application note.
- Texas Instruments, [AM625SIP – AM6254 Sitara™ Processor with Integrated LPDDR4 SDRAM](#) data sheet.
- Texas Instruments, [Hardware Design Guide for AM62x Devices](#) application note.
- Texas Instruments, [Powering the AM625SIP With the TPS65219 PMIC](#) application note.
- Texas Instruments, [AM62x SiP PCB Escape Routing](#) application note.

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