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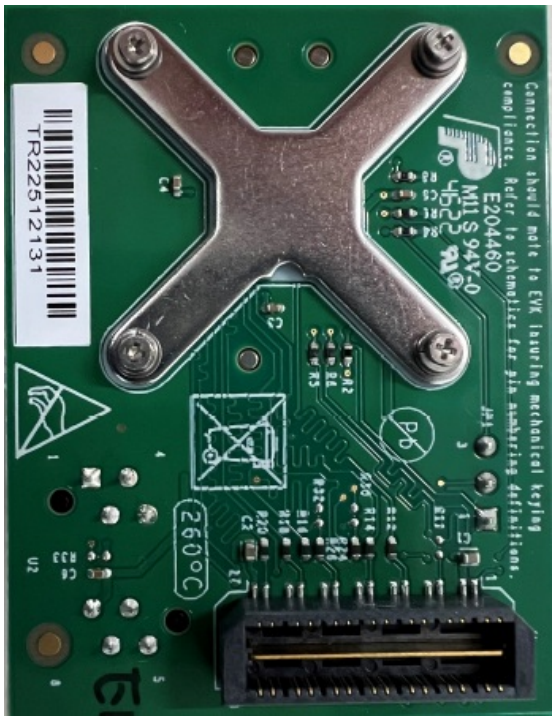
NXP UM12170 External Memory Card for MCX and i.MX RTx EVK Boards



Introduction

This document describes an adapter card that plugs into some EVK boards to provide an interface to various octal or quad FLASH (or RAM) parts. By default, NXP EVK boards have an onboard external memory device to interface with MCUs. To allow users to use different external memory devices (octal FLASH, quad FLASH, PSRAM), NXP EVK boards provide an option to connect an external adapter card.

Capabilities

The board provides three placement options for FLASH / RAM parts:

- A socketed (or soldered-down) BGA24 standard octal package
- A socketed SOIC-8 standard quad package
- A soldered-down SOIC-8 standard quad package

Note: Only one of the placement locations can be used at a time.

Compatible boards

The following EVK boards provide support for the external memory card.

- RT600 IMXRT685-AUD-EVK
- MCX-N9XX-EVK

- MCX-N5XX-EVK
- MIMXRT1180-EVK

Compatible parts

The compatible FLASH / PSRAM parts are as follows:

- BGA24 package:
  - Micronix:
  - MT25QL512ABB8E12
  - MX25UM51345GXDI00
  - Adesto:
  - ATXP032B-CCUE-T
  - ATXP064B-CCUE-T
  - Cypress:
  - S26JS256SDOBGV02
- SOIC-8 package:
  - ISSI
  - IS25WP064AJBLE
  - Micronix:
  - MX25U51245GZ4100
  - Winbond:
  - W25Q64FW

Other parts may be compatible. See the table and connections in the schematic to verify the pin and signal compatibility for other parts and check the part specifications for package characteristics.

Usage

- The typical usage for this board is to plug it into a compatible board and to add a FLASH or RAM part to be tested into the U1 socket (for BGA24 package parts).
- One alternate usage is to use the U2 socket (for SOIC-8 package parts). In this case, the board requires a modification. This modification is the addition of 0-Ω resistors at R21 thru R26 locations.
- Both of these implementations add some resistance and capacitance from the

connectors and socket connections which may limit the highest speed operation. The protocols and compatibility can still be validated.

- If a highest-speed operation is required to test a BGA24-package part, remove socket U1 and solder the BGA24 part directly to the board. The socket and BGA24 part footprints are compatible.
- If a highest-speed operation is required to test a SOIC-8 package part, remove resistors R9 to R20. Add 0-Ω resistors to locations R27 to R32 and solder the SOIC-8 package part to be tested at location U3.

Configuration

When a part is installed in the socket or soldered down, there is only one hardware configuration item to consider. When using an octal RAM part, the hardware is slightly different. For the FLASH operation, a shunt is placed at location JP1, connecting pins 1 and 2. For a RAM part testing, move this shunt to connect pins 2 and 3 on JP1. There are no other settings for this board.

Board files

Along with the user manual, the board files are available to users as a reference to build the boards. These boards are not available for sale from NXP.

Board pictures

This section provides the pictures of the board.

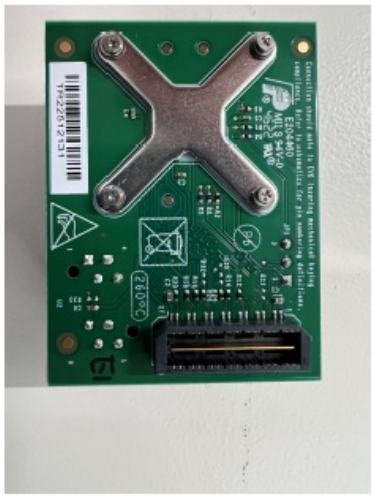


Figure 1. Bottom side

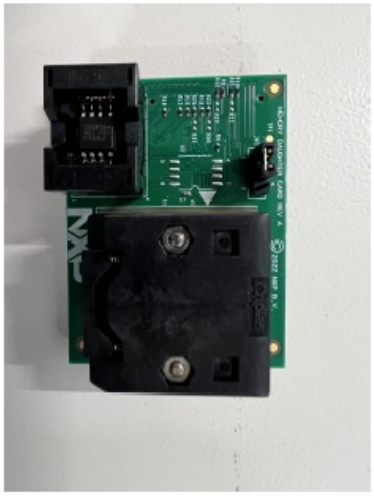


Figure 2. Top side

Revision history

Table 1. Revision history

Document ID	Release date	Description
UM12170 v.1.0	14 May 2025	• Initial version

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Document feedback

Date of release: 14 May 2025 Document identifier: UM12170

FAQs

- **Q: What types of external memory devices are compatible with this adapter card?**
  A: The adapter card supports various octal or quad FLASH (or RAM) parts. Refer to the user manual for a list of compatible parts.
- **Q: Are there any specific hardware configurations required for using different memory devices?**
  A: Yes, for using an octal RAM part, ensure the shunt at location JP1 is correctly set. Refer to the user manual for detailed configuration instructions.

Documents / Resources

	NXP UM12170 External Memory Card for MCX and i.MX RTx EVK Boards [pdf] User Manual UM12170, UM12170 External Memory Card for MCX and i.MX RTx EVK Boards, External Memory Card for MCX and i.MX RTx EVK Boards, MCX and i.MX RTx EVK Boards, i.MX RTx EVK Boards, EVK Boards

References

- User Manual

NXP

EVK Boards, External Memory Card for MCX and i.MX RTx EVK Boards, i.MX RTx EVK Boards, MCX and i.MX RTx EVK Boards, NXP, UM12170, UM12170 External Memory Card for MCX and i.MX RTx EVK Boards

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