



FRONTGRADE

APPLICATION NOTE

1Gb/64Mb NOR Flash

Interfacing to UT700/699E

12/1/2021

Version #: 1.0.0

Table 1: Cross Reference of Applicable Products

Product Name	Manufacturer Part Number	SMD #	Device Type
1 Gb SPI NOR Flash	UT81NFR1G1	5962-21210	All
1 Gb Parallel NOR Flash	UT81NFR128M8	5962-21209	All
64 Mb SPI NOR Flash	UT81NFR64M1	5962-21210	All
64 Mb Parallel NOR Flash	UT81NFR8M8	5962-21209	All

Overview

This Design Note provides the user with top-level information for interfacing the Frontgrade NOR Flash with the Frontgrade UT700/699E interfaces. This document includes the interface for booting the UT700/699E from the NOR Flash.

Design Implementation (Parallel)

The UT81NFR128M8 and UT81NFR8M8 devices have a single voltage supply that can operate at either 3.3 or 2.5 Volts. The UT700/699E I/O supply voltage recommended operating conditions for the PROM interface require the use of 3.3 Volts.

Interface Pin List

UT700/699E Pin Name	NOR Flash Pin Name	Functional Description
ADDR[26:0]	A[25:0], A-1	Address inputs (DQ[15] is A-1 in x8 mode)
OEN	OE#	Output enable
WRITE	WE#	Write enable
ROMS[0]	CE#	Chip enable
DATA[15:0]	DQ[15:0]	Data input/output
	BYTE#	X16/x8 mode control
	RESET#	Part Reset
	RY/BY#	Device ready indicator
	WP#	Write protect
	PwrDN#	Part Power down (1Gb only)

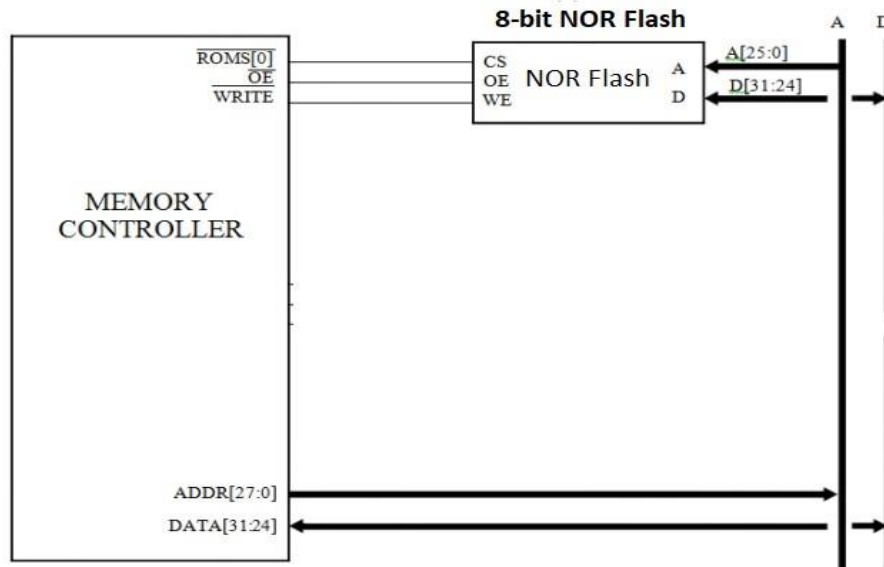


Figure 3: Basic Parallel NOR Flash to UT700/699E Connections (x8 interface)

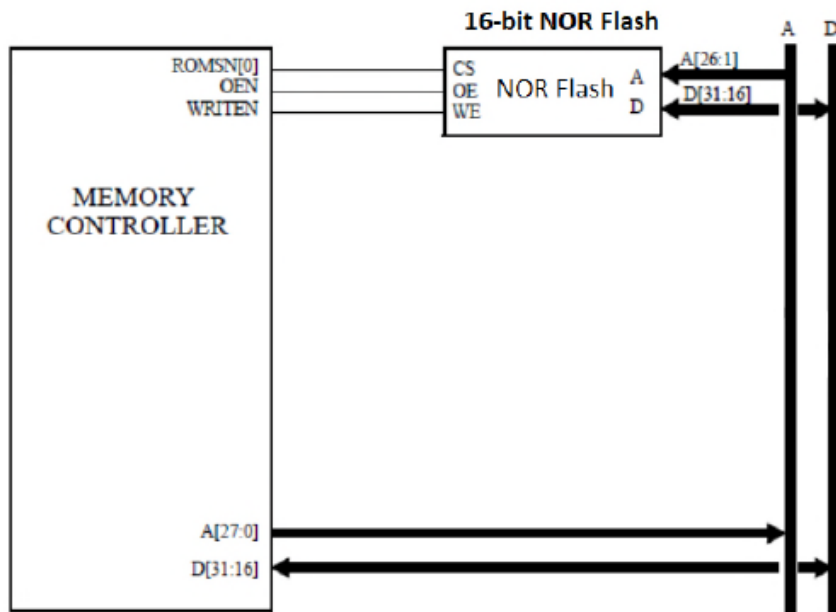


Figure 4: Basic Parallel NOR Flash to UT700/699E Connections (x16 interface)

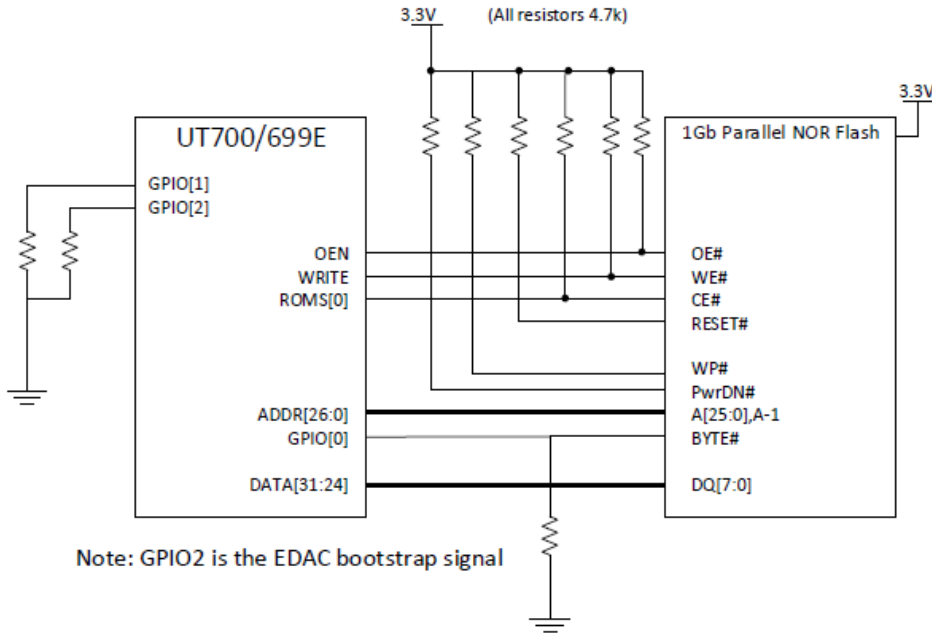


Figure 5: NOR Flash Boot Configuration Mode x8 Example

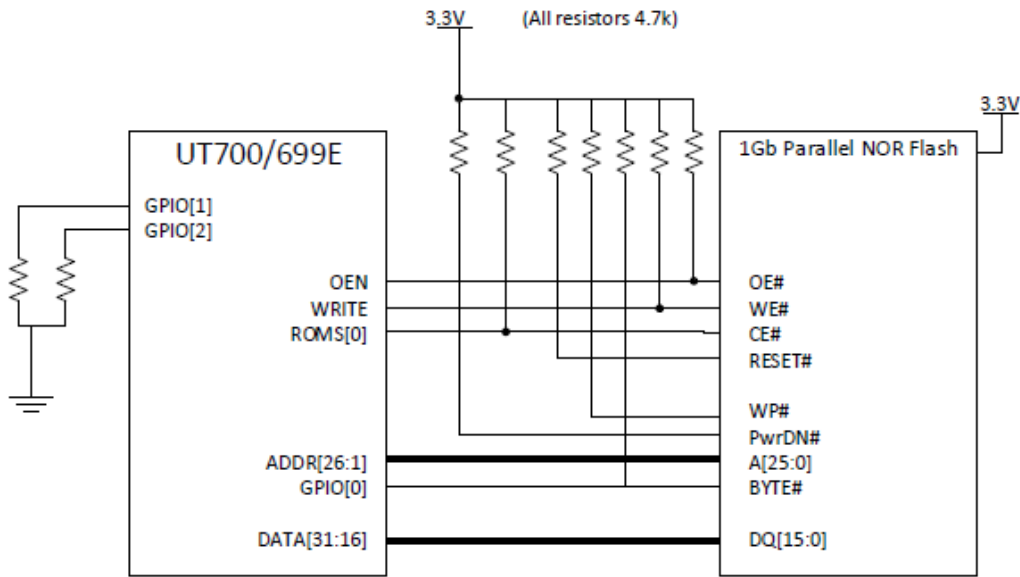


Figure 6: NOR Flash Boot Configuration Mode x16 Example

Setup

GPIO[2] controls the reset value of the PROM/IO controller's PROM EDAC enable (PE) bit. When this input is '1' at reset, EDAC checking of the PROM area will be enabled. Design Implementation (SPI)

Interface Pin List

GR716 Pin Name	NOR Flash Pin Name	Functional Description
SPIMOSI	MOSI	NOR SPI Input
SPIMISO	MISO	NOR SPI Output
SPISLVSEL	SS#	Slave Select
SPI_SCK	SCLK	Serial Clock
	WP#	Write Protect
	RESET#	Part Reset
	PwrDN#	Part Power Down

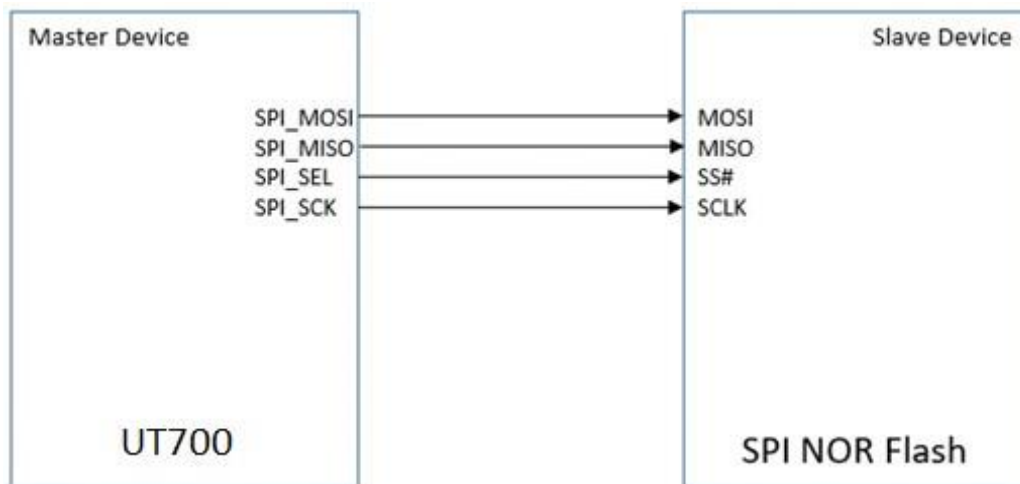


Figure 7: Basic SPI NOR Flash to UT700 Connections

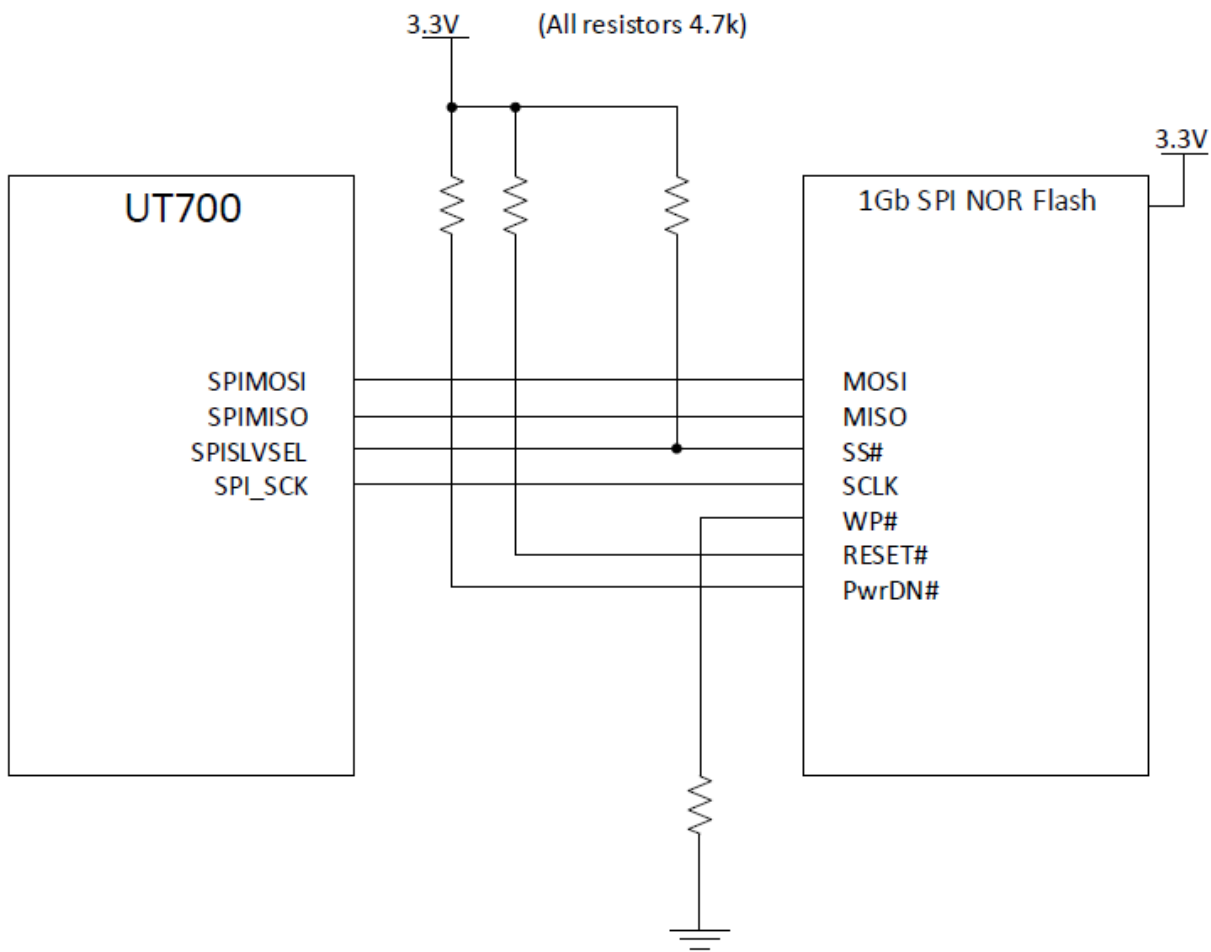


Figure 8: SPI Configuration Mode Example

Setup

The SPI interface is not available for boot-up operations on the UT700. Additionally, the SPI interface is unavailable on UT699E, and only available on UT700. Reference the UT700/699E user manual for details on setting up the SPI operation in section 19.3. This section lists the registers that controls the SPI and how to configure the interface.

Revision History

Date	Revision #	Author	Change Description	Page #
12/2021	1.0.0		Initial Release	

Frontgrade Technologies Proprietary Information Frontgrade Technologies (Frontgrade or Company) reserves the right to make changes to any products and services described herein at any time without notice. Consult a Frontgrade sales representative to verify that the information contained herein is current before using the product described herein. Frontgrade does not assume any responsibility or liability arising out of the application or use of any product or service described herein, except as expressly agreed to in writing by the Company; nor does the purchase, lease, or use of a product or service convey a license to any patents rights, copyrights, trademark rights, or any other intellectual property rights of the Company or any third party.