
# Preventing SDRAM Device Lock-up: NS9775, NS9750, NS9750B-A1, and NS9360 (NS9xxx)

August 2005

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On the NS9775, NS9750, NS9750B-A1, and NS9360 (NS9xxx), to prevent SDRAM devices from locking up during a manual or brown-out condition following the initial power on reset, you must change the SDRAM clock enable configuration. Otherwise, the SDRAM devices can become locked up during a manual or brown-out condition reset as described next:

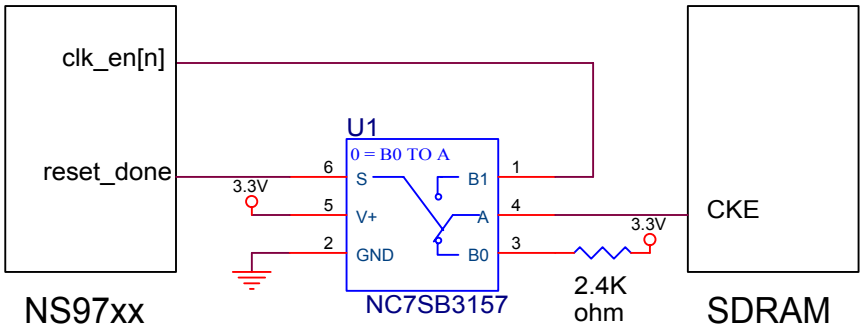
1. A manual or brown out condition reset is applied to reset_n on the NS9xxx.
2. At the same time, a read command is active to the SDRAM devices connected to the NS9xxx.
3. The `reset_n` to the NS9xxx shuts off clocks and clock enables to SDRAM devices, preventing the read command from being completed.
4. The SDRAM devices become permanently locked up at this time. A power cycle is required to return the SDRAM devices to normal operation.

The only exception is if power is cycled automatically during a brown-out condition reset and a manual push button reset is not used or if clock enables to the SDRAM devices are connected directly to 3.3V.

## NS9775 / NS9750 / NS9750B-A1 workaround

Use either of these two options to avoid the SDRAM lock up condition during a manual or brown out condition reset on a board using the NS9775, NS9750 or NS9750B-A1:

- Connect the clock enables on the SDRAM devices directly to 3.3V or pull-up resistor.
- Use a switch to connect clock enables to the SDRAM devices to a pull-up resistor until the NS97xx device reset is complete as indicated by a high level on the `reset_done` output. This illustration shows a sample circuit:



## NS9360 workaround

Use either of these two options for avoiding the SDRAM lock up condition during a manual or brown out condition reset on a board using the NS9360:

- Connect the clock enables on the SDRAM devices directly to 3.3V or pull-up resistor.
- Connect a 10-15k pull up resistor on the clock enable signals between the NS9360 and the SDRAM devices.