

**Proposed
Draft**

**Serial ATA
International Organization**

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**Serial ATA ECN #049 for SATA30_TPR_C101
mSATA Connector Specification
Title : P51 Pull-Down Resistor Value and
Reference Circuit and P43 Definition**

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Document History

Version	Date	Comments
0.1	12-14-2010	Initial release.
0.2	1-05-2011	Change name of pin 43 to "Device Type". Define P51 use. Use informative instead of reference. Change figure from color to gray. Change the expression "tamper proof" to "actively detect".
0.3	1-05-2011	Change the title to include the P43 change. Change the date and revision number on page 1. Change the copyright date on page 2 Imported the SATA 3.1 wording on P43 and its associated note 4. Changed "Pulled" to "connected" on the P51 description and added the word "ohm" after "0". Removed the word "actively" from the proposed note 1 (because a pull-down resistor is passive) and added the word "mSATA. Changed the SATA 3.1 note 4 wording. Changed the units on the pull-down resistor in the drawing from capital-omega to the word "ohm" and added the word "ohm" after "0" for consistency with SATA I/O drawing requirements. Changed the units in the pull-up resistor in the drawing from upper-case "K" to lower-case "k" and put a space between it and the "33" for consistency with SATA I/O drawing requirements.
0.4	1-11-2011	Capitalized the O in "Ohm"
1.0	1-12-2011	Changed "No-Connect" to "not connected" in P43 description and note 4. Changed units of pull-up resistor to "kOhm" in the drawing for consistency with SATA I/O drawing requirements.

1 Introduction

1.1 Problem Statement

1. The range of pull-down resistor values on P51 needs to be specified.
2. Add a reference design drawing to assist implementors in designing a bi-directional P51 for compatibility with non-mSATA devices.
3. The difference between P43's and P51's usage is not clear.

1.2 Solution Summary

P51 (PRESENCE DETECTION) is currently required to be "Pulled to GND by Device". The pull-down resistor value needs to be specified to preclude implementations that will lead to logically-undefined levels such as 10K-ohm pull-up and pull-down resistors on both Host and Device.

Since some implementors are implementing designs which can accommodate both mSATA and non-mSATA devices with conflicting P51 definitions in the same socket, a reference drawing will help prevent implementations which could cause device damage.

ECN 045 established P43 as a no-connect in order to differentiate mSATA devices from non-mSATA devices. This is not the same as presence detection because an mSATA device with a no-connect on this pin will give the same logic level as an empty socket. To clarify the usage, the pin description will be changed to "DEVICE TYPE" with a note.

2 Technical Specification Changes

2.1 < Section 1.4.2, Table 1 “Signal Assignments for mSATA” >

Pin#	Type	Description
P43	No-Connect Device Type	PathNoConnect indicates mSATA-use Shall be not connected on mSATA devices ⁴
P51	Presence Detection	Shall be pulled connected to GND by a 0 Ohm -220 Ohm resistor ¹

NOTES:

1. Presence detection pin ~~provided for tamper proof functionality~~ indicates presence of an mSATA device. See figure 1 for an informative host-side bi-directional implementation for compatibility with non-mSATA devices that may use this pin as an input.
4. ~~Pin 43 to be No-Connect on the mSATA card to enable differentiation between mSATA and non-mSATA cards—configurable shared socket designs may use a system side pull-up resistor to establish a logical differentiation usable to assist in interface configuration given that non-mSATA cards will ground this pin. P43 to be not connected on mSATA devices. Given that non-mSATA devices ground P43, configurable shared-socket designs may use this pin to identify mSATA and non-mSATA devices.~~

2.2 < Section 1.4.2, Table 1 “Signal Assignments for mSATA”, add figure 1 >

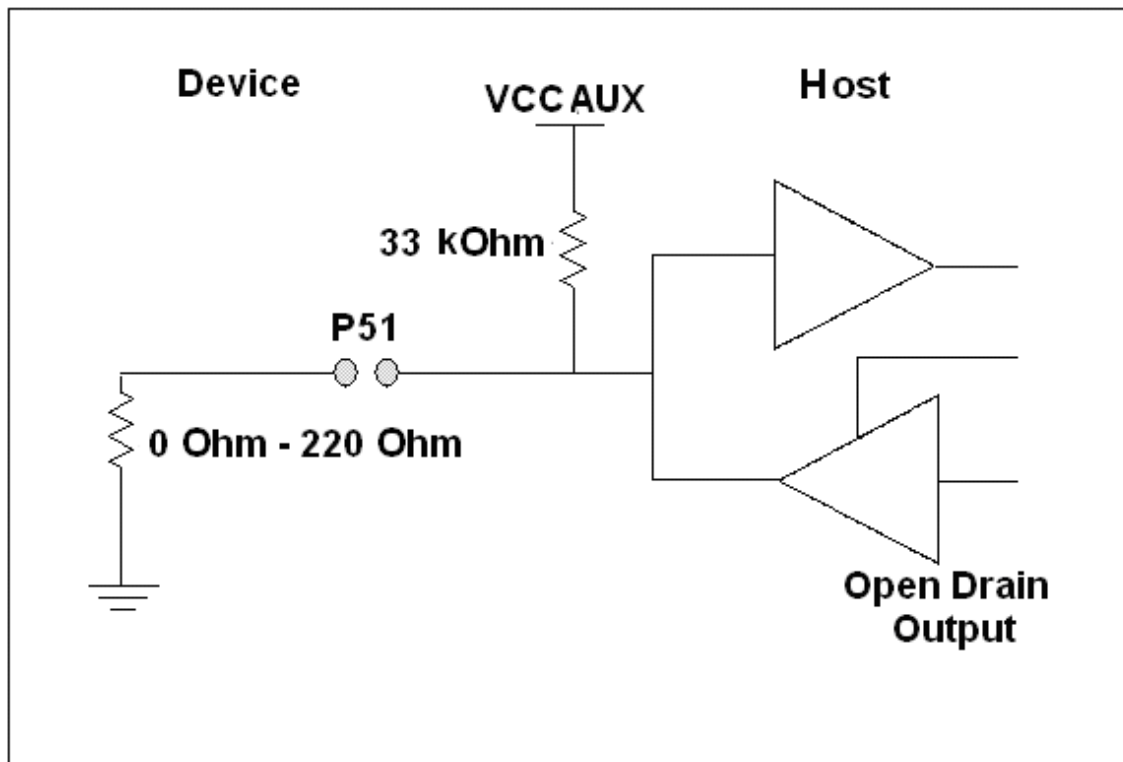


Figure 1: Bi-directional host-side implementation of P51 for compatibility with non-mSATA devices (Informative)