

**Proposed
Draft**

**Serial ATA
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**SATA30_TPR_C103_V03
Title: Micro SATA Connector P7 Definition**

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Introduction

This proposal is intended to define the electrical characteristics of P7 on the Micro SATA connector to act as a device activity signal.

1 Proposed Changes

1.1 Micro SATA Connector P7 Definition (optional)

P7 of the micro SATA connector may be used by the device to provide the host with an activity indication. The activity indication provided by P7 is primarily for use in backplane applications. Reference section 13.14 for information on activity LED generation for desktop applications.

1.1.1 Device Activity Signal (optional)

1.1.1.1 Electrical Definition

The signal the device provides for activity indication is a low-voltage low-current driver intended for efficient integration into current and future IC manufacturing processes. The signal is not suitable for directly driving an LED and must first be buffered using a circuit external to the device before driving an LED.

The activity signal is based on an open-collector or open-drain active-low driver. The device shall tolerate the activity signal being shorted to ground. The device shall tolerate a no-connect floating activity signal.

Table 1 and Table 2 define the electrical parameters and requirements for the activity signal for both the device and the host. Figure 1 is an example of an activity signal implementation for illustrative purposes. Note that the host cannot rely on a particular resistor pull-up value on the device side, nor can the device rely on particular host resistor values. No direct support for wire-ORing signals from multiple devices is accommodated. Host implementations that produce a single activity signal by combining multiple device inputs should buffer the signals prior to combining them.

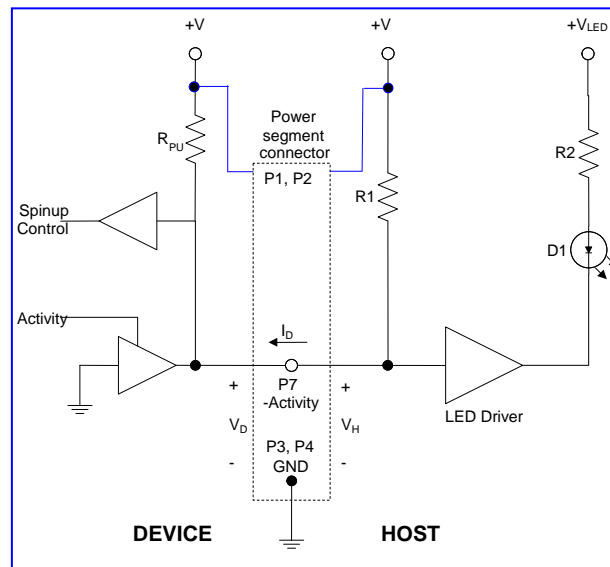


Figure 1 Example activity signal electrical block diagram

All voltage references in Table 1 and Table 2 are to ground pin 4 on the device connector. All voltages and currents in Table 1 and Table 2 are measured at P7 on the device connector.

Table 1 Micro SATA connector P7 activity signal electrical parameters

Parameter	Min Value	Max Value	Description & Conditions
V_{DIn}	-0.5 V	2.1 V	Tolerated input voltage
V_{DAct}	0m V	225 mV	Device output voltage when driving low under the condition I_D less than or equal to 300uA
$V_{DIInact}$	-0.1 V	3.3 V	Device output voltage when not driving low
$I_{DIInact}$	-10 uA	100 uA	Device leakage current when not driven

Table 2 Host activity signal electrical parameters

Parameter	Min Value	Max Value	Description & Conditions
V_{HIn}	-0.5 V	3.3 V	Tolerated input voltage
V_{HH}		2.1 V	Host voltage presented to device when device not driving signal low.
V_{HL}	-0.1 V		Minimum allowable host voltage that may be presented to the device.
I_{HAct}		300 uA	Host current delivered to device when device driving signal low. Value specified at V_{DAct} voltage of 0V.

1.1.1.2 LED Driver Circuit (informative)

The LED driver circuit provided by the host to drive an activity LED is vendor specific. Figure 2 illustrates two conceptual driver circuits that would satisfy the electrical requirements and provide a signal suitable for driving an activity LED. Variations in the driver circuits can be employed to drive the LED when active or to drive the LED when the device is inactive through the use of an inverting or non-inverting buffering arrangement.

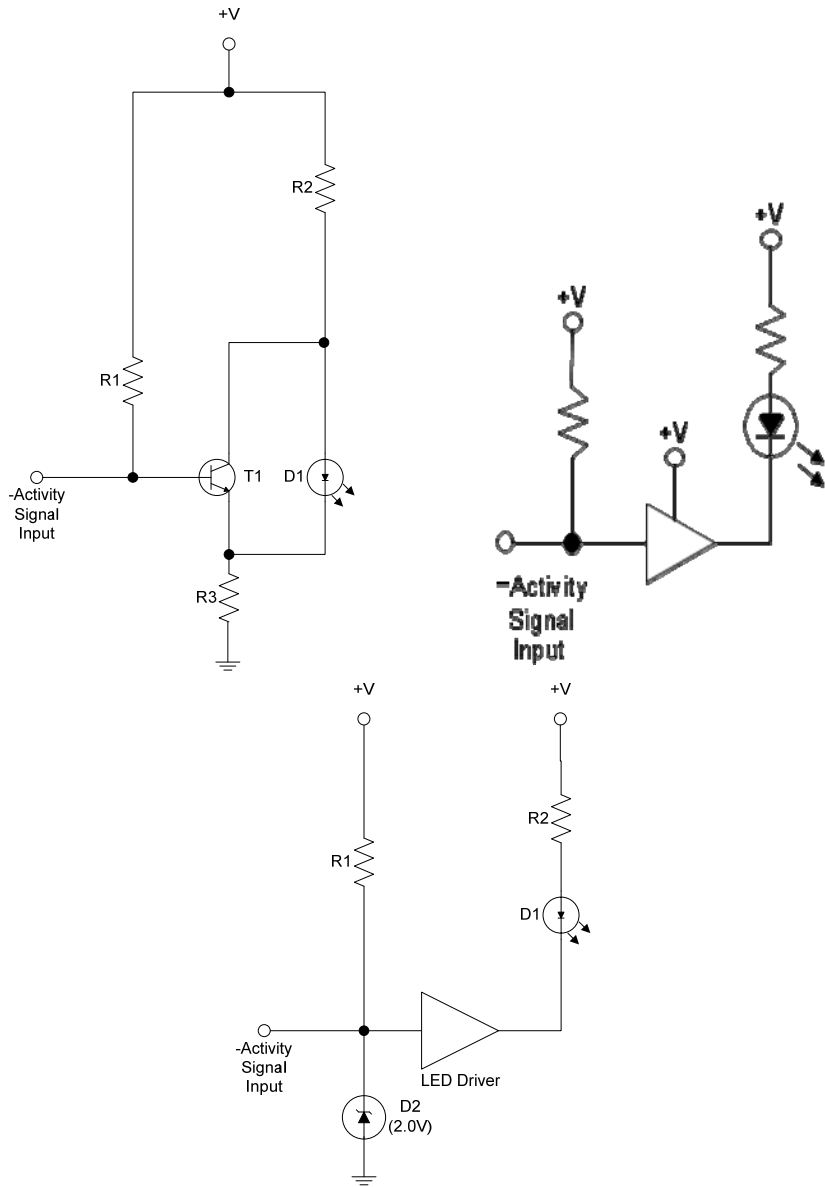


Figure 2 Example host LED driver circuits

1.1.1.3 Functional Definition

Table 3 defines the two activity signal states and the corresponding conditions.

Table 3 Activity signal functional states

State	Condition
Signal asserted (driven low)	Command(s) outstanding ¹
Signal de-asserted (high impedance)	All other conditions

Notes:

1. Devices may omit asserting the activity signal for commands that do not access the media and have an expected service time too short to allow visual perception of the signal. Command(s) outstanding does not include the software reset, power-on reset, or COMRESET command protocols. As a consequence, P7 shall not be driven low by the device prior to return of the reset signature for the reset command protocols. This is behaviorally different than the parallel ATA DASP- signal.