Keywords: analog switches, I2C bus, MDIO interface, SFP modules

APPLICATION NOTE 4552

Analog Switch Multiplexes SFP Modules

By: Kevin Bilke
Nancy Xiong

Dec 23, 2010

Abstract: To avoid multiple I²C bus masters in a telecom or data-communications system with SFP modules, add an analog multiplexer (MAX4572) that directs the data line to the appropriate SFP module.

A similar version of this article appeared in the August 2, 2007 issue of *Electronic Design* magazine.

Small-form-factor pluggable modules (SFP modules) are in common use for the physical-layer interface in telecom and data-communications equipment. Also common in these systems is an I²C bus for the MDIO interface (Management Data Input/Output).

Sadly, when several SFP modules are used they all have the same I²C address, so they cannot all connect to the same I²C bus. To avoid multiple I²C bus masters in that situation, you can introduce an I²C-controlled analog switch (MAX4572 in **Figure 1**), which directs the data line to the appropriate SFP module.

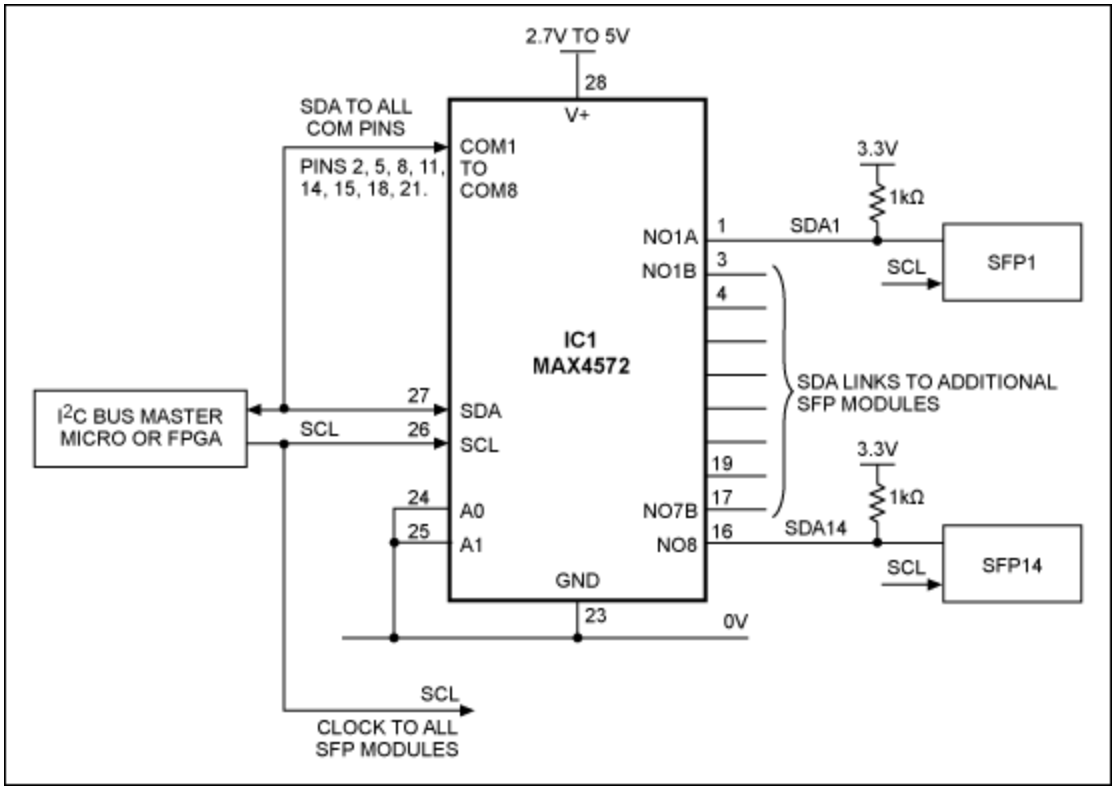

Figure 1. Configured as a 1-of-14 multiplexer, this analog switch (IC1) enables a single I²C bus master to address up to 14 SFP modules.

IC1, which includes six SPDT switches and two SPST switches. In the MAX4572 each arm of the SPST switches is independently controllable; it is configured as a 1-of-14 multiplexer with an I²C address of 68h. All its COM lines connect to the bus master's SDA line, and each NO output can connect to an SFP module (a 1kΩ pull-up resistor at each SFP input ensures that the undriven SDA lines remain high). The SFP modules retain their addresses, in the range A0h to A2h.

Related Parts		
MAX4572	Serially Controlled, Clickless Audio/Video Switches	Free Samples

More Information
For Technical Support: http://www.maximintegrated.com/support
For Samples: http://www.maximintegrated.com/samples
Other Questions and Comments: http://www.maximintegrated.com/contact

Application Note 4552: http://www.maximintegrated.com/an4552
APPLICATION NOTE 4552, AN4552, AN 4552, APP4552, Appnote4552, Appnote 4552