Low capacitance bus switch exhibits extended operating voltage range

ECN Europe

The TC7SB3157CFU from Toshiba Electronics Europe [1] is a 1-bit SPDT (single pole double throw) bus switch for high-speed digital applications requiring a 5V interface. With low I/O terminal capacitance (CI/O) and on resistance (RON) the new device is ideal for switching high-speed data traffic.

[2]While consumer type products such as portable navigation systems and mobile telephones can typically operate with a supply voltage of 3V or below, the requirements of industrial or home appliance systems is still typically limited to the more standard 5V voltage level. Because the new bus switch operates across a wide supply voltage range, from 1.65V to 5.5V it is also suitable for the increasing number of industrial applications that need to cope with increasing data rates.

The high-speed operation of the TC7SB3157CFU is supported by a small propagation delay (much smaller in comparison to a buffer/transceiver device) in combination with the minimum impact on data signal rise and fall times that results from the typical ON state terminal capacitance of only 15pF and resistance of just 4W. Bidirectional operation without the need for a direction control signal makes easy implementation in any design possible. Furthermore, the switch can transmit full swing and analogue signals with minimum distortion due to a switch structure comprising an N-channel and P-channel MOSFET combination.

Additional features of the device include low power consumption, with a maximum quiescent current of only 10µA and input leakage current of 1µA. Electrostatic discharge (ESD) robustness is better than ±2kV according to the human body model (HBM).

Toshiba’s TC7SB3157CFU is supplied in a standard SOT363 package.

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