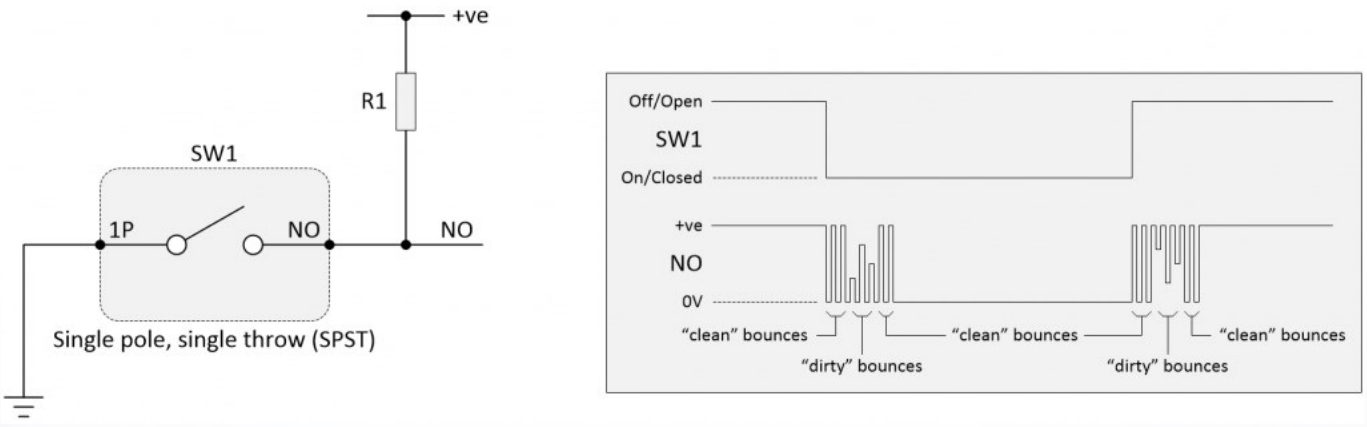
The Benefits of LogiSwitch's NoBounce Technology

By Stephen R. Pollock, VP of Marketing and Sales, LogiSwitch LLC

What is Switch Bounce?

When you open or close a mechanical switch it is not cleanly on or off. There is a period when the switch is in an undefined state due to oscillations caused by changing the switch's electrical state. These oscillations are called "switch bounce." The switch bounce duration of a mechanical switch's on bounce and off bounce is dependent on a number of factors including: the switch metallurgy, the temperature, the humidity, the RC characteristics of the interconnect, the mechanical characteristics of the opening and closing of the switch, the oxidation of the switch surfaces, and the power source electrical characteristics. There are many unknowns and the switch debounce characteristics will change over time.



Switch bounce on an SPST-NO toggle switch (Image source: Max Maxfield)

Why Should You be Concerned About Switch Bounce?

There are two primary concerns:

1. False Input – This can cause unexpected system behavior and even worse, catastrophic system failures in “fail safe” systems.
2. Is a Software Solution Sufficient – Constantly checking for changes on system inputs can be wasteful of system resources and can create problems in the future if software changes are not properly implemented.

False Input

Sensing a switch output while it is bouncing can lead to false inputs that can have serious results in “fail safe” environments such as the medical, avionic, automotive, military, and industrial applications. Even in non-critical consumer applications like a TV remote control, a false input can cause annoying unexpected behavior.

Is a Software Solution Sufficient?

Using software to perform the debounce function on the surface appears to be a reasonable solution but has hidden pitfalls. To be constantly polling for infrequent switch transitions is wasteful of sometimes precious compute cycles. Switch bounce is a nuance that is difficult to replicate and is usually not considered when system testing a new software release. What if the debounce software was accidentally modified during the creation of the release? The software would pass system test but have random failures in the field. Random failures are very difficult to diagnose. Why take this chance when LogiSwitch has the solution?

NoBounce Technology Eliminates Debounce

Mike Pelkey, LogiSwitch Founder and CEO has refined his switch debounce solutions over his long system design and manufacturing career. NoBounce™ technology is a very complete solution that eliminates debounce and delivers clean, no bounce inputs to the system. This is accomplished by a proprietary set of algorithms that are continuously adapting to the switch’s

ever-changing characteristics delivering a clean noise free and debounce free signal to the system over the lifetime of the system and over the wide range of operating conditions. Designing in NoBounce eliminates the risk of noise and switch bounce induced failures.

About the Author

Stephen R. Pollock, VP of Marketing and Sales, LogiSwitch LLC

Steve started his career as custom chip designer at Texas Instruments. After a successful chip design career, he moved into high technology marketing and sales,

Most of his career has been connected to the semiconductor industry with a couple of forays into the consumer electronics industry. Since 1984, Steve has specialized in launching start-up companies.

He worked for a number of EDA (Electronic Design Automation) companies, including Cadence Design Systems, where he was the group director of marketing for Simulation Products. He was Chairman of the EDS Alliance Emerging Companies Committee for many years.

He returned to the semiconductor industry in 2014 joining Semi-Pac, a Silicon Valley developer of advanced packaging technology and a provider of quick turn prototype services.

Steve joined LogiSwitch in 2020.