

Solving Quiet Tactile Feedback Challenges with C&K Switches® KSC XA Tactile Switches

Quiet Tactile Feedback Overview

Modern product designs increasingly demand quiet tactile interfaces that allow users to interact with devices seamlessly and silently. Achieving this balance between responsive tactile feedback and quiet, almost silent operation is particularly critical in medical devices, automotive applications, home automation, and consumer electronics applications. However, traditional mechanical switches often produce distracting noise, challenging engineers and designers seeking user-friendly and noise-sensitive solutions.

C&K Switches® KSC XA Series addresses this challenge by offering quiet, responsive tactile feedback without the clicking sounds typical of traditional switches. With its soft tactile bump, compact design, and durable construction, the KSC XA series is the ideal solution for noise-sensitive applications. Additionally, C&K provides other soft-sound tactile switch options, including the KSC SLT, TLS, TLSM, and SFS series, each tailored for specific use cases.

KSC XA Series: The Ideal Quiet Tactile Switch

Our engineers designed the KSC XA Series to provide soft tactile feedback with minimal noise, ensuring reliable and quiet operation. Its compact size and durability make it adaptable to a wide range of applications, from consumer electronics to automotive interiors.

Key Features

- **Quiet, Soft Tactile Feedback:** Delivers a subtle tactile bump without disruptive clicking sounds, ideal for noise-sensitive environments.
- **Wide Range of Operating Forces:** Offers options from 3.5 to 9.6 N, allowing flexibility for different user preferences and applications.
- **Durability:** Rated for up to 1 Mio life cycles, making it suitable for high-usage environments.
- **Compact Design:** With dimensions of 6.2 x 6.2 mm, the KSC XA series is small and low-profile, allowing it to fit into compact consumer electronics or medical devices without



Figure 1. KSC XA Tactile Switches

compromising on performance.

Recommended Applications for KSC XA Series

- **Medical Devices:** Perfect for patient monitors, diagnostic tools, and medical control panels, where quiet operation and precise input are crucial.
- **Consumer Electronics:** Enhances the user experience in applications like headphones by delivering soft, quiet, and comfortable interactions.
- **Home Automation:** Ideal for smart thermostats, lighting controls, and security systems, where users demand reliability and silence.

Automotive Interiors: Suitable for infotainment systems, climate control switches, and dashboard buttons, offering quiet, durable performance for noise-sensitive environments.



Other Soft Sound Tactile Switches from C&K Switches®

C&K’s soft sound tactile switch portfolio also includes other series, each catering to specific design challenges and applications. Below is a summary of their unique benefits and focus applications:

KSC SLT Series: Ultra-Silent Feedback with Long Travel

Main benefits: Combines virtually silent operation with long travel, offering a deliberate and pronounced actuation for enhanced user confidence.

Applications: Ideal for medical diagnostic devices, laboratory instruments, and specialized consumer electronics, where extended travel and ultra-silent operation are critical.

TLS Series: Versatility in Tactile Feedback

Main benefits: Provides medium travel with moderate to high actuation forces, offering quiet and reliable tactile feedback.

Applications: Best suited for automotive interior controls and steering wheel control, where durable, consistent performance and precise feedback are needed.

TLSM Series: Long Life and Safety

Main benefits: Delivers quiet tactile feedback with short travel of only 0.3 mm, and an exceptional lifespan of up to 2 million cycles. The SPDT (Single Pole, Double Throw) function adds a layer of operational safety, enabling a secondary circuit path.

Applications: The TLSM Series is ideal where longevity, quiet performance, and safety are essential, such as EV charger guns, elevator buttons, and industrial control systems.

SFS Series: Silent and Soft Feedback

Main benefits: The SFS series focuses on extremely quiet tactile feedback, delivering silent operation while maintaining user input clarity.

Applications: Suitable for vehicle mid-consoles, medical equipment, precision industrial controls, and high-end electronics, where silence and subtle feedback are critical.

Conclusion:

C&K Switches’ soft-sound tactile switches are the solution to today’s demand for quiet, near-silent, tactual user interfaces. The KSC XA series offers silent operation, tactile reliability, and versatility across various applications, from medical devices to automotive interiors. Complementary products like the KSC SLT, TLS, TLSM, and SFS series provide tailored solutions for unique design challenges, ensuring that engineers can select the best switch for their specific needs.



Figure 2. KSC SLT Tactile Switches for Medical Application

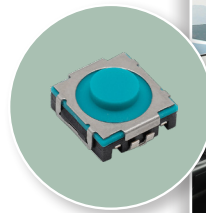


Figure 3. TLS Tactile Switches for Automotive Application

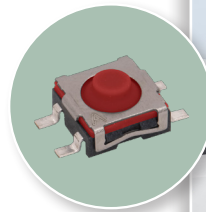


Figure 4. TLSM Tactile Switches for EV Application

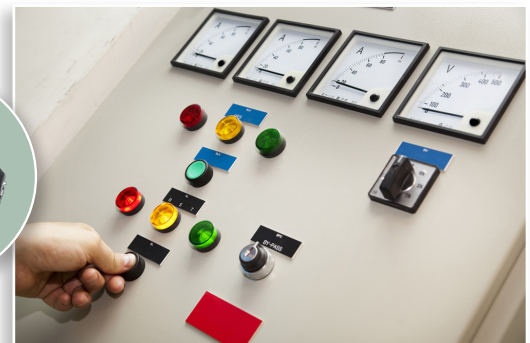


Figure 5. SFS Tactile Switches for Industrial Control or High-end Electronics Application

Disclaimer Notice - This document is provided by Littelfuse, Inc. (“Littelfuse”) for informational and guideline purposes only. Littelfuse assumes no liability for errors or omissions in this document or for any of the information contained herein. Information is provided on an “as is” and “with all faults” basis for evaluation purposes only. Applications described are for illustrative purposes only and Littelfuse makes no representation that such applications will be suitable for the customer’s specific use without further testing or modification. Littelfuse expressly disclaims all warranties, whether express, implied or statutory, including but not limited to the implied warranties of merchantability and fitness for a particular purpose, and non-infringement. It is the customer’s sole responsibility to determine suitability for a particular system or use based on their own performance criteria, conditions, specific application, compatibility with other components, and environmental conditions. Customers must independently provide appropriate design and operating safeguards to minimize any risks associated with their applications and products.

Littelfuse products are not designed for, and shall not be used for, any purpose (including, without limitation, automotive, military, aerospace, medical, life-saving, life-sustaining or nuclear facility applications, devices intended for surgical implant into the body, or any other application in which the failure or lack of desired operation of the product may result in personal injury, death, or property damage) other than those expressly forth in applicable Littelfuse product documentation. Littelfuse shall not be liable for any claims or damages arising out of products used in applications not expressly intended by Littelfuse as set forth in applicable Littelfuse documentation.

Read complete Disclaimer Notice at www.littelfuse.com/disclaimer-electronics