V1.0 | January 2023

Round Touch 60 Switch
DESIGN RATIONALE

Makers Making Change
A Neil Squire Program

Introduction

The Round Touch 60 Switch can control 3.5 mm audio outputs like in the Xbox Adaptive Controller and other switch adapted products. This device may benefit users with limited hand dexterity and strength who find it challenging to trigger mechanical switches.

Research

Device	Price	Link
Capacitive Touch Button 	~$200	Capacitive Touch Button Selection (bannerengineering.com)

Requirements

Goals

G01	Allow users with limited hand dexterity/strength trigger switches

Functional Requirements

F01	Activate switch operated devices through a 3.5 mm mono jack
F02	Use capacitive touch to trigger a switch

Non-functional Requirement

NF01	Housing should be printed without supports

Constraints

C01	Built with 3D printed and off the shelf components

Round Touch 60 Switch
DESIGN RATIONALE

Detailed Design

- Design by Jeffrey Ebin and submitted to forum.
- Capacitive touch switch with 3D printed housing.

Opportunities for Improvement

- Battery operated.
- BOM refined for low quantity builds.

Alternate Components

A true solid-state relay may be a more useful switch than the optocoupler (as drawn by Jeffrey Ebin, MD). While the optocoupler would be adequate for a computer input (low current), its output is polarity sensitive, and doesn't have enough current handling capacity to control many switch adapted toys. Here's a part that solves both of these issues, and for icing on the cake, is a drop-in replacement for the one in the drawing. Will cost about 5 dollars more though.
https://www.digikey.ca/en/products/detail/omron-electronics-inc-emc-div/G3VM-41AY1/5799756