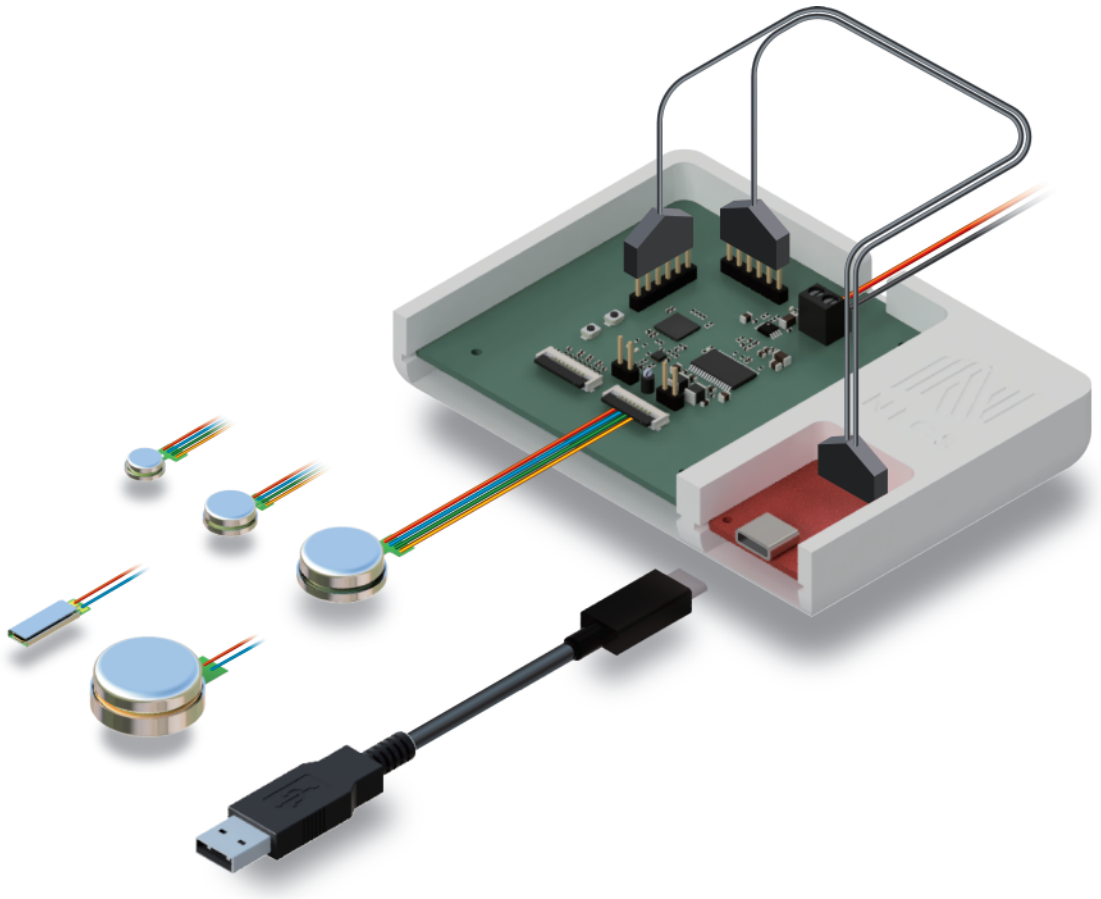
NECS

Software and MCU-Based Haptic Actuator Evaluation Kit

Software-Driven Platform for Haptic Signal Control and Feedback



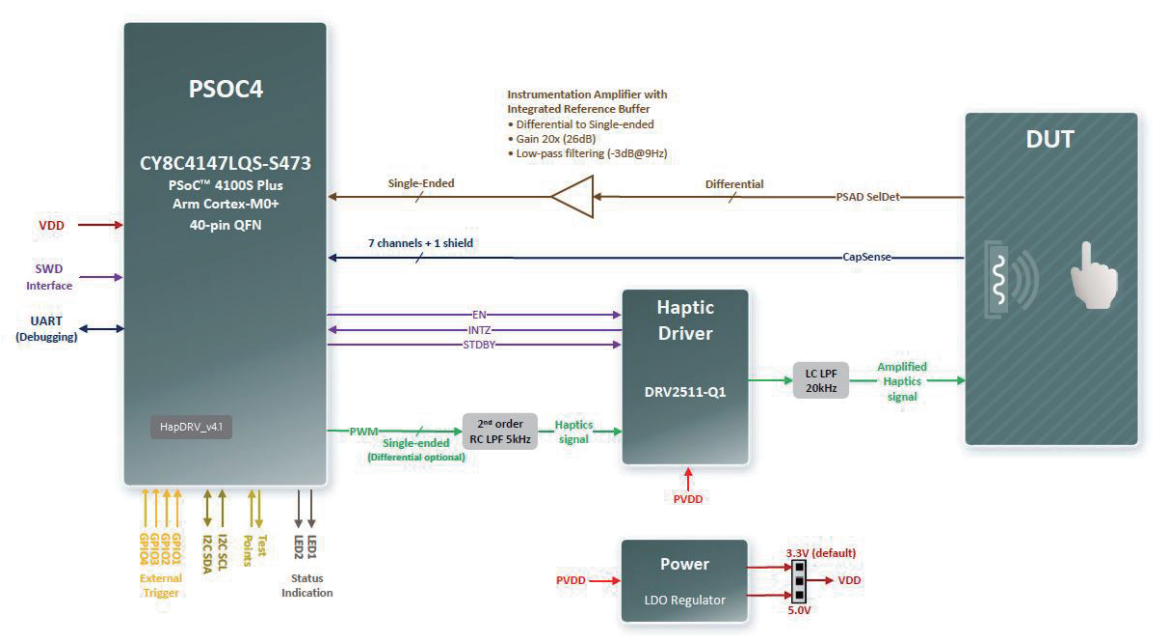
1. Overview

This kit is designed to support the development and demonstration of a haptic feedback system using NECS haptic actuators.

2. Features

- Based on Infineon PSoC™ 4100S Plus + TI DRV2511
- .wav to PWM signal conversion using Scilab
- Selection detection feature enabled / PWM-based output

System Diagram



Selection detection feature enabled / PWM-based output

Haptic signal generation and amplification via DRV2511 amplifier

Signal amplification / Press and release detection via selection sensing feature

3. Setup Instructions

1. Connect the HapDRV board to the KitProg3 board using the SWD interface
2. Connect the KitProg3 board to a PC via USB
3. Connect the 12V DC power adapter to the HapDRV board
4. Launch the PSoC Creator software
5. Select the .cywrk project file from "File → Open"
6. Click the "Program" button to flash the firmware

*Detailed user instructions are provided separately.

4. Selection Detection and Signal Tuning

What is SetDet? SetDet refers to a technology that detects press and release actions on the haptic feedback surface by measuring voltage changes generated from the Selection Detection coil.

Adjustable Parameters

- Press Threshold
- Release Threshold
- Release Ratio
- Minimum Delay
- ADC LSB Size

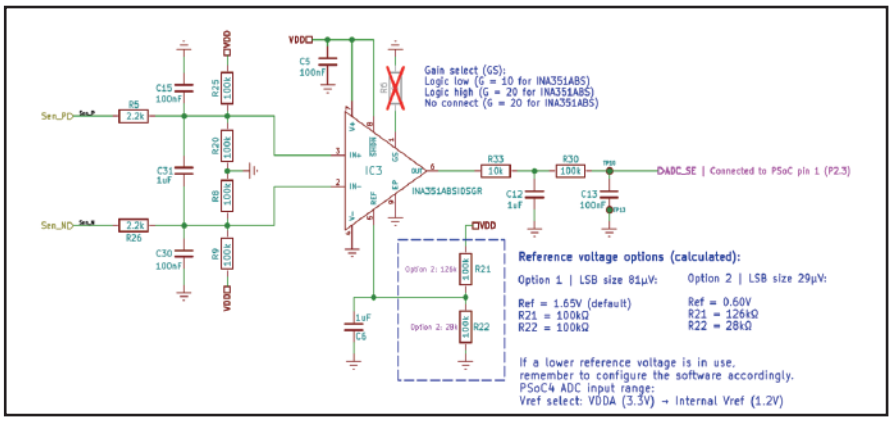
5. System Configuration and Hardware Specifications

Board Components

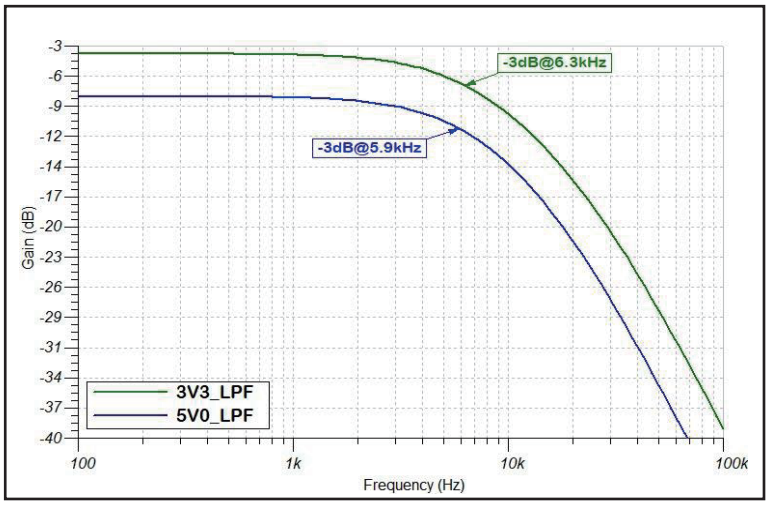
- PSoC 4100S Plus MCU
- DRV2511: Up to 8A output, 20 dB gain
- INA351 Amplifier: 26 dB gain, with filtering
- Optimize SelDet performance

SelDet performance

- Detection voltage range: 165 mV
- Filtering frequency: 9 Hz



SelDet Path



PWM Low-Pass filter for 3.3 V and 5 V logic levels

6. Contact information

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