StarterTRAK TRK-S12VR-WLFT Development Platform

Window lift and relay-based DC motor control reference design
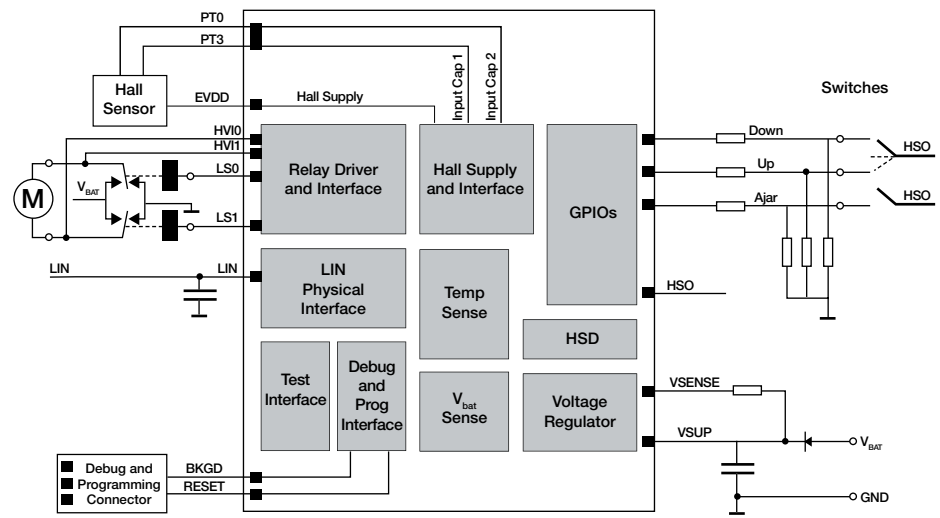
Overview

The S12 MagniV S12VR portfolio of mixed-signal microcontrollers (MCUs) streamlines automotive engineering by offering smart, optimized integration of high-precision analog components combined with the proven S12 MCU. The S12VR family is the first set of system in package devices in the portfolio based on the LL18UHV process technology targeting both automotive and industrial anti-pinch window lift, power sun roof modules, LIN controlled relay drivers, smart actuators, relay-based DC Motors and other space-constrained relay-based DC motor control applications.

This low-cost reference design showcases the main advantages of the MagniV S12VR 16-bit MCU to drive relay-based DC motors, some applications are window lifters for passenger door and sun roof systems. The solution features a low amount of external components, and a simple design where all the components are placed on top side. It also manages high voltages of 8 to 24 volts.

Target Applications

- Power-operated window systems
- Roof panel systems
- Partition systems
- Relay-based DC motor control

Hardware Overview

Window Lifter and Relay-based DC Motor with Anti-Pinch Detection Software Overview

The software provided for this reference platform, can be used as a starting point for window lifters relay-based DC motors with anti-pinch detection. Features HAL and MCU initialization, self reversal routine, anti-pinch detection, speed and direction handling, self calibration and other fundamental functionalities required for this application.

Availability

This StarterTRAK development platform is available at $55 USD to evaluate the solution. The tool includes SWD connector interface for debugging purposes and a DVD is provided with anti-pinch reference software (SW), documentation and layout files to facilitate re-use and speed time to market. All SW and documentation is available at **freescale.com/TRK-S12VR-WLFT**
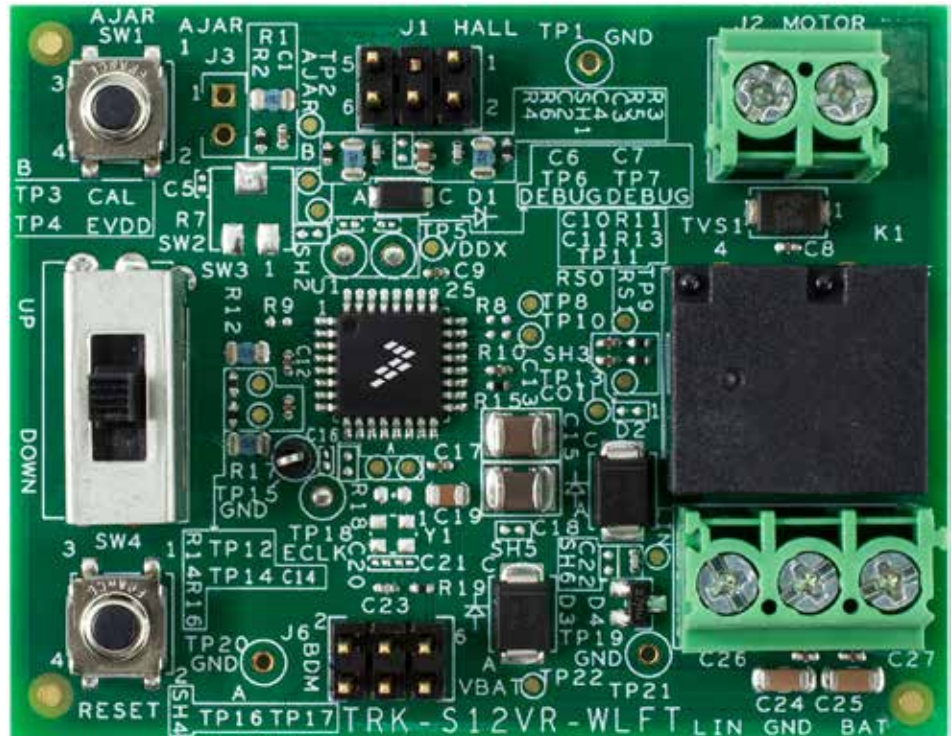
Kit Contents:

- TRK-S12VR-WLFT board

- DVD: CodeWarrior, Anti-Pinch SW, Design Reference Manual

- Quick Start Guide

Key Features:

- Relay diagnostic through HVIX wake up pins. State can be sent through LIN

- Operating voltage range from 8 to 18 V

- 32-LQFP S12VR

- Anti–pinch, motor stall detection, via Hall effect encoder

- Ajar switch driven through the HS0. Switch status can be sent through LIN and the switch can be disabled by time or a LIN command.

- Window command switch, features express up/down

Window Lift and Relay-based DC Motor Control Control Reference Design Hardware

For more information, please visit freescale.com and freescale.com/TRK-S12VR-WLFT