



Azoteq




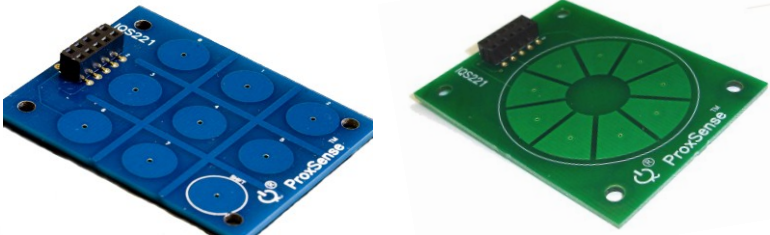
IQS221 Evaluation Kit

IQS221EV02 (AZP075 PCB)





Evaluation Kit Contents:

1 x AZP075 Controller PCB:	
1 x Keypad PCB	
1 x 2032 Battery (optional)	Optional 2032 battery included when EV02 is used as stand-alone kit
IQS221 IC Samples	

The keypad is easily removable from the IQS221 controller PCB. This makes the controller PCB a rapid design tool when prototyping with the IQS221 9-channel capacitive sensing controller IC. The module is assembled with a SO-32 packaged device, and SO-32 samples are also included. These samples can be used for rapid prototyping with any design. The IQS221 IC is also packaged in the very compact QFN5x5-32 package.

Operation:

1. Ensure the Keypad is connected to the EV02 controller PCB.
2. **Standalone Mode:** Connect V⁺ and V⁻ to supply voltage (3.0V to 5.5V) or flip switch to ON position if optional battery kit is supplied. (**Note:** Remove battery before connecting to PSU)

Debug Mode: Module can be connected to VisualProxSense on the SPI header to evaluate the real-time working of the IQS technology. See Application note "AZD006 – VisualProxSense Overview ver.x.x.pdf" for further details. (**Note:** Module is powered from USB in Debug Mode and LEDs do not switch as T0 lines are used for SPI communication)

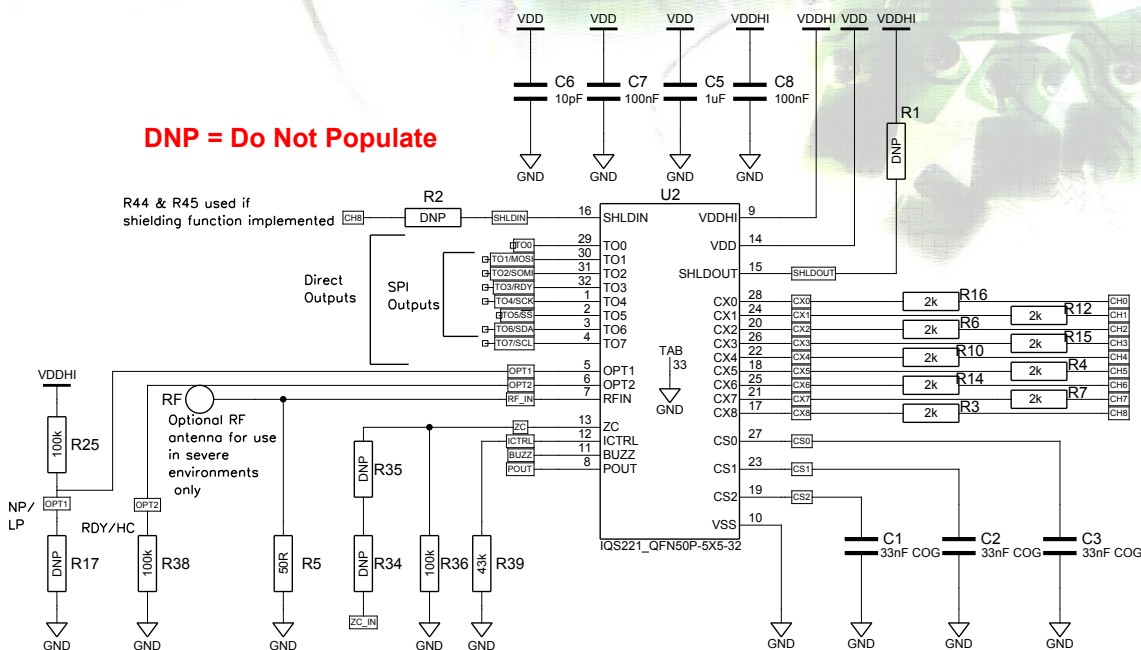


Figure 1: IQS221 Reference Design (with optional synchronisation input and Driven Shield GND)



Optional:

Synchronisation Input: The IQS221 can be synchronised with an external MCU or High Voltage (50Hz) AC source through the population of the correct resistors to the ZC pin.

Driven Shield Output: One channel of the IQS221 (CX8 for this design) can be shielded if it is needed to locate the proximity sensor in a remote location.

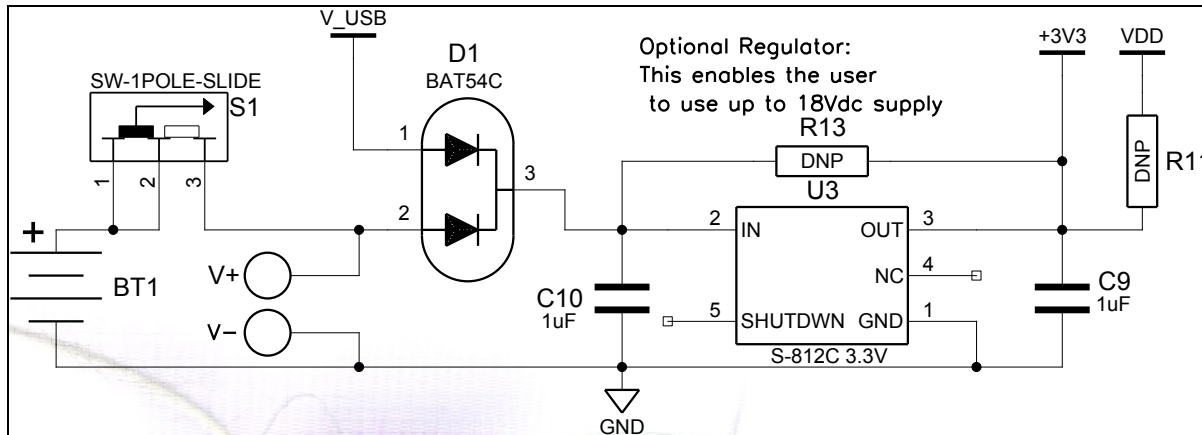


Figure 2: Optional: Regulator stage (with reverse voltage protection)

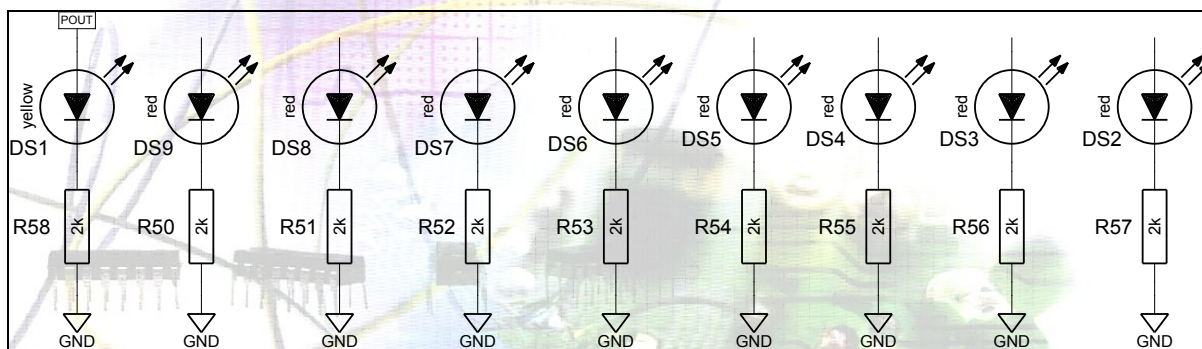


Figure 3: Optional: LEDs to indicate active outputs

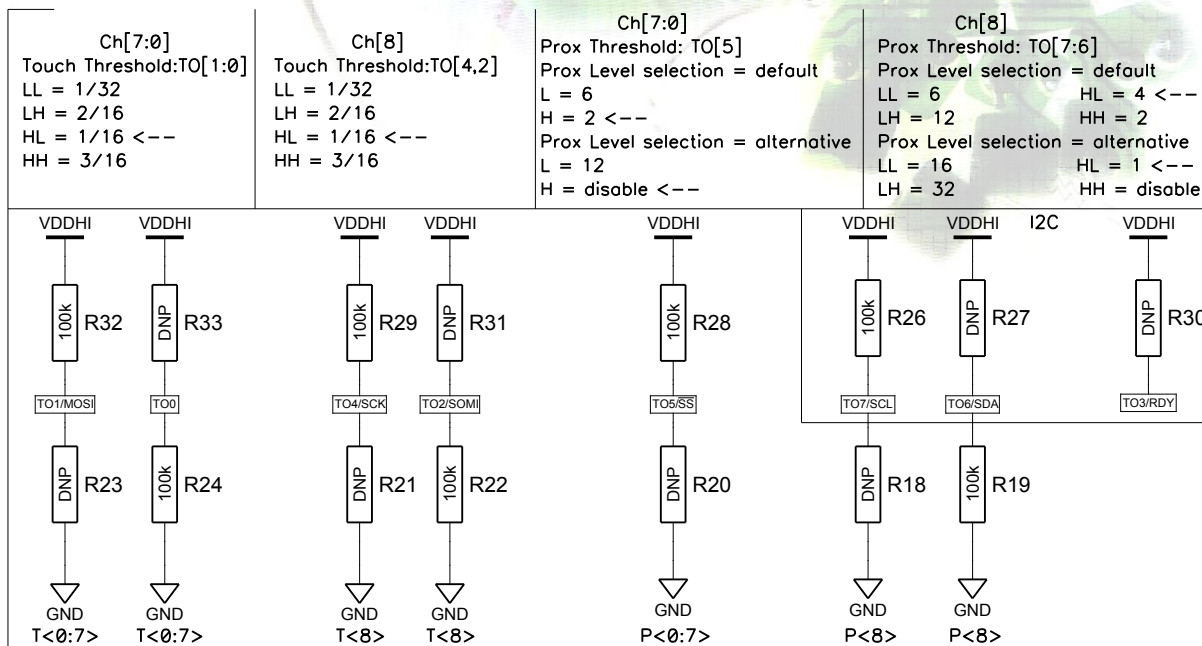


Figure 4: Optional: External Selections for Prototyping purposes. Production versions can be coded with these selections internal (except T04).

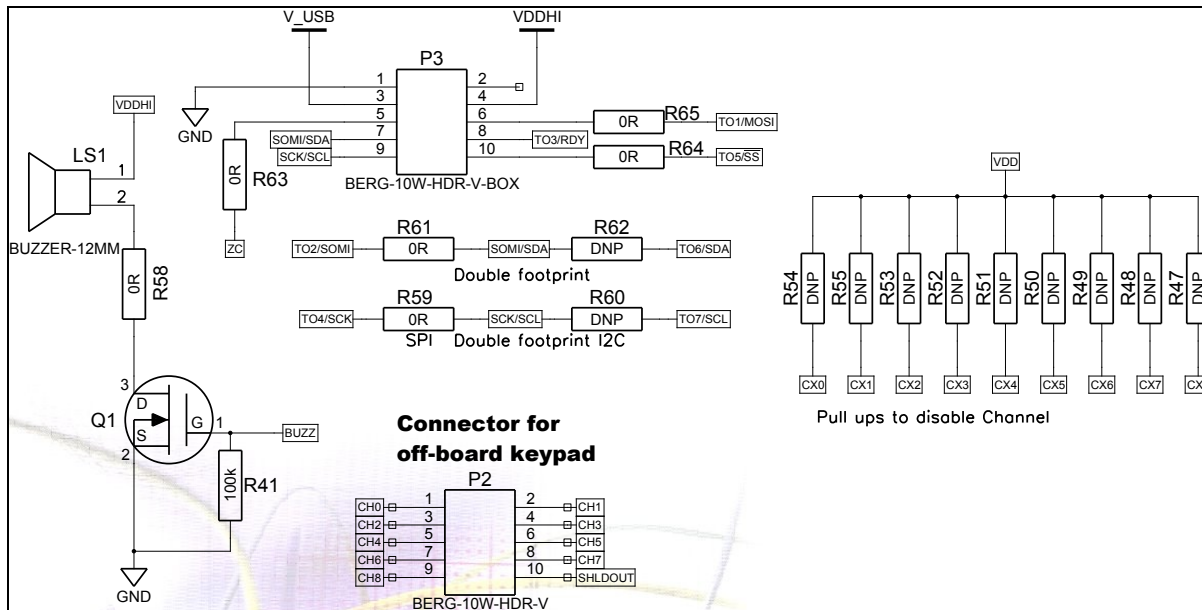


Figure 5: Optional: Buzzer, SPI Header, Keypad Header, Resistors to disable channels

Pin Breakouts

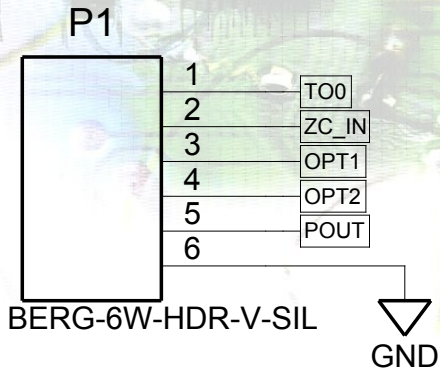


Figure 6: Pin Breakouts

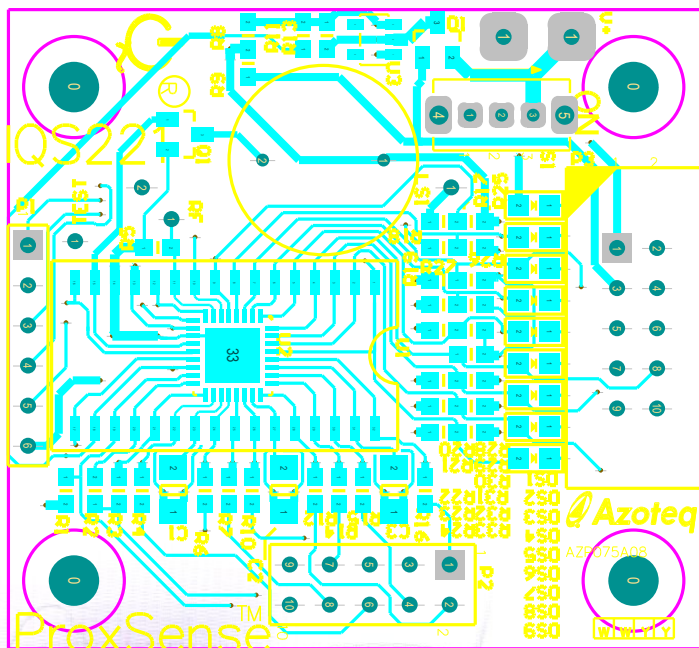


Figure 7: Top layer component placement

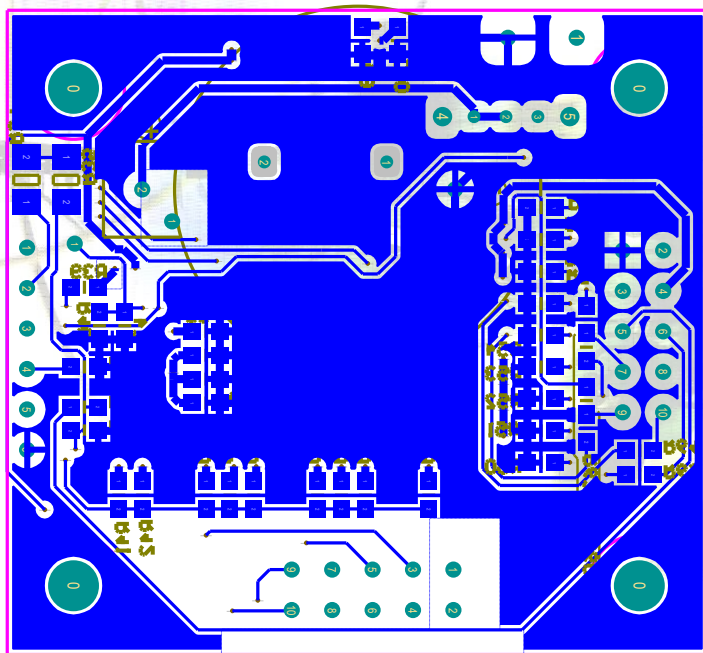


Figure 8: Bottom layer component placement



Note:

- Additional hardware not necessary for general designs with IQS221:
 - Reverse voltage protection diode.
 - 3.3V_{DC} regulator (User can input up to 18V_{DC} with regulator).
 - External selection resistors for sensitivity prototyping purposes.
 - Buzzer and related control hardware.
 - Synchronising (ZC) input.
 - Active driven shield output.
 - Option to disable individual channels with resistors.
- R[9:1] populated for additional ESD protection.
- Sensitivity fine-tuning:
 - Increase CS capacitors will increase module sensitivity.
 - Decrease CS capacitor will decrease module sensitivity.
- Default configuration (OTP bits):
 - DIR-A. (Key 7 will not respond with a LED, as there are only 8 TO LEDs populated)
 - Normal power mode.
 - LED will switch off if proximity occurs for 15sec or more, and no touches are detected (environmental filter – see datasheet for additional options).
 - RF filter enabled.
 - Shield disabled.
- User can select custom options for IQS221 OTP bits with “PartNumberGenerator” which can be found on www.azoteq.com under the downloads section.
- Keypad header can be used to connect controller PCB to custom product.
- Connecting the IQS221 EV02 module to a good ground connection will significantly increase proximity detection distance.

Please visit www.azoteq.com for a full portfolio of the ProxSense™ Capacitive Sensors, Datasheets, Application Notes and Evaluation Kits available. Samples, additional information and orders to be placed through ProxSenseSupport@azoteq.com