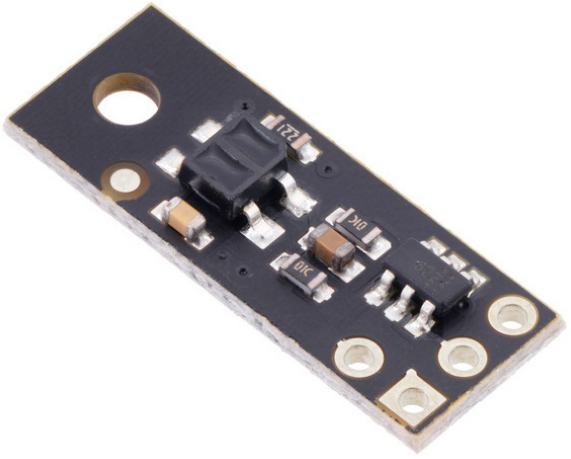
QTR-MD-01RC Reflectance Sensor: Popolu # 4141

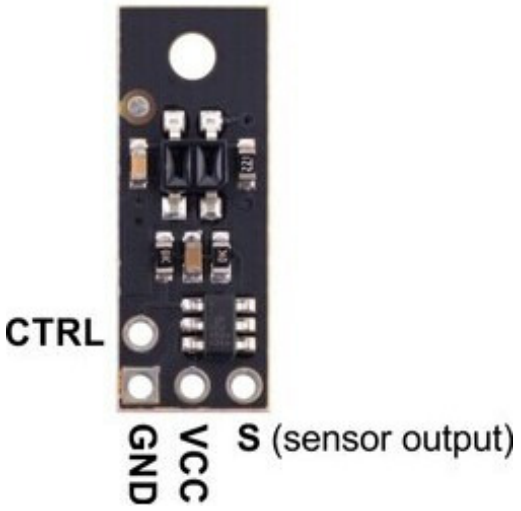
QTR-MD-01RC Reflectance Sensor: 1-Channel, 7.5mm Wide, RC Output



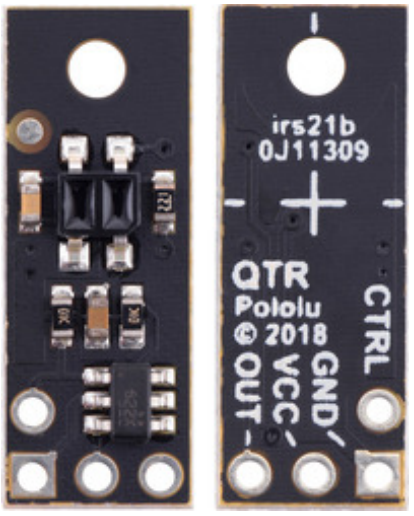
sensors	size (mm)	output	max current		optimal range
			LED	board	
1	7.5 × 20.0	RC (digital)	30 mA	32 mA	5 mm

This IR LED/phototransistor pair is great for precisely identifying changes in reflectance (like line detection). It operates from 2.9 V to 5.5 V and offers dimmable brightness control independent of the supply voltage. In general, the closer the object, the higher the contrast between light and dark readings, but high-reflectance objects are generally detectable out to around **30 mm**. This version features a traditional-style **QTR** sensor without lenses.

Details for item #4141



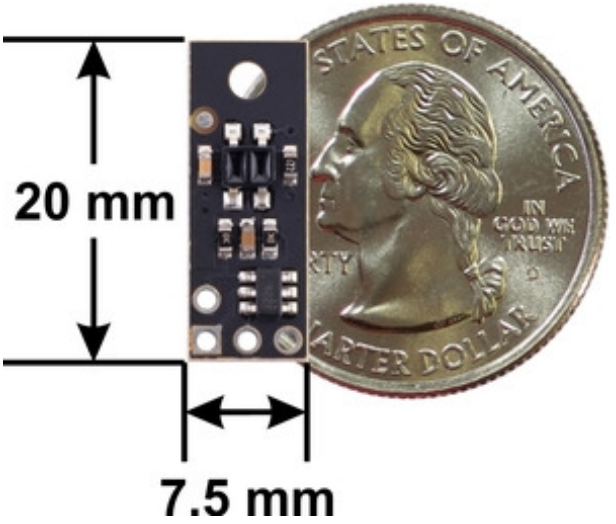
Pinout diagram of the QTR-MD-01RC Reflectance Sensor Array.



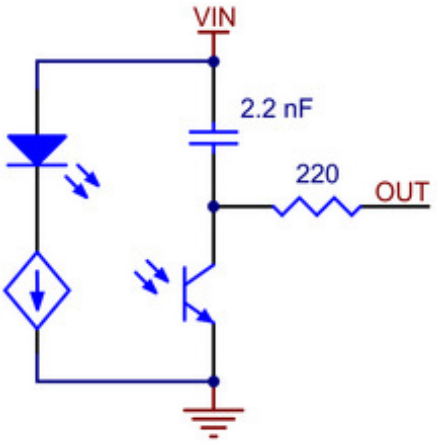
QTR-MD-01RC Reflectance Sensor, front and back views.

Specifications

- Dimensions: 7.5 × 20.0 × 2.5 mm (see the **dimension diagram** (1MB pdf) for more details)
- Operating voltage: 2.9 V to 5.5 V
- Sensor type: QTR
- Sensor count: 1
- Full-brightness LED current: 30 mA (independent of supply voltage)
- Max board current: 32 mA
- Output format: digital I/O-compatible signal that can be read as a timed high pulse
- Optimal sensing distance: 5 mm
- Maximum recommended sensing distance: 30 mm
- Weight: 0.35 g



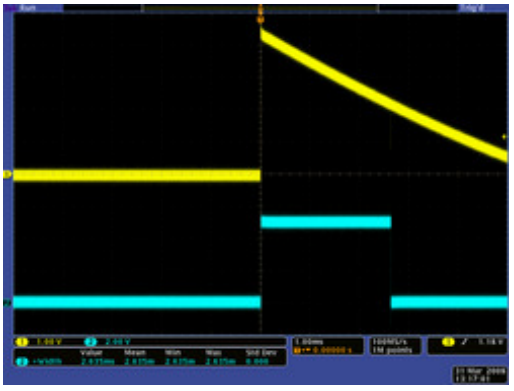
QTR-MD-01RC Reflectance Sensor dimensions.



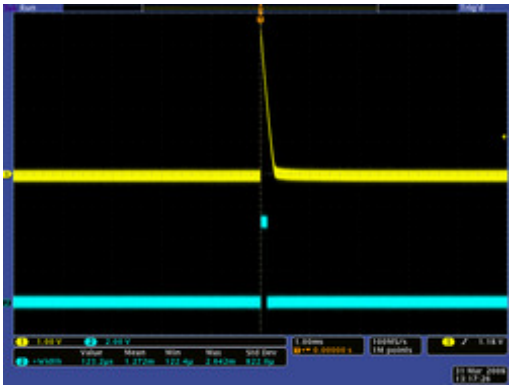
Schematic diagrams of individual QTR sensor channels the RC version

Interfacing with the outputs of the RC versions

Each sensor on the RC versions requires a digital I/O line capable of driving the output line high and then measuring the time for the output voltage to decay. The typical sequence for reading a sensor is:



QTR-1RC output (yellow) when 1/8" above a black line and microcontroller timing of that output (blue).



QTR-1RC output (yellow) when 1/8" above a white surface and microcontroller timing of that output (blue).

1. Turn on IR LEDs (optional).
2. Set the I/O line to an output and drive it high.
3. Allow at least 10 µs for the sensor output to rise.
4. Make the I/O line an input (high impedance).
5. Measure the time for the voltage to decay by waiting for the I/O line to go low.
6. Turn off IR LEDs (optional).

   With a strong reflectance, the decay time can be as low as a few microseconds; with no reflectance, the decay time can be up to a few milliseconds. The exact time of the decay depends on your microcontroller's I/O line characteristics. Meaningful results can be available within 1 ms in typical cases

Emitter control

These reflectance sensor arrays maintain a constant current through their IR emitters, keeping the emitters' brightness constant, independent of the supply voltage (2.9 V to 5.5 V). The emitters can be controlled with the board's CTRL pins, and the details of the control depends on the array size and density:

MSOE application - leave the Control pin floating