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## QTI Line Sensor (#550-27401)

### Introduction

The Parallax QTI sensor uses a QRD1114 infrared (IR) reflective sensor to determine the reflectivity of the surface below it. When the QTI sensor is over a dark surface, the reflectivity is very low; when the QTI is over a light surface, the reflectivity is very high and will cause a different reading from the sensor.

### Features

- Phototransistor Output
- No contact surface sensing
- Unfocused for sensing diffused surfaces
- Compact Package
- Daylight filter on sensor

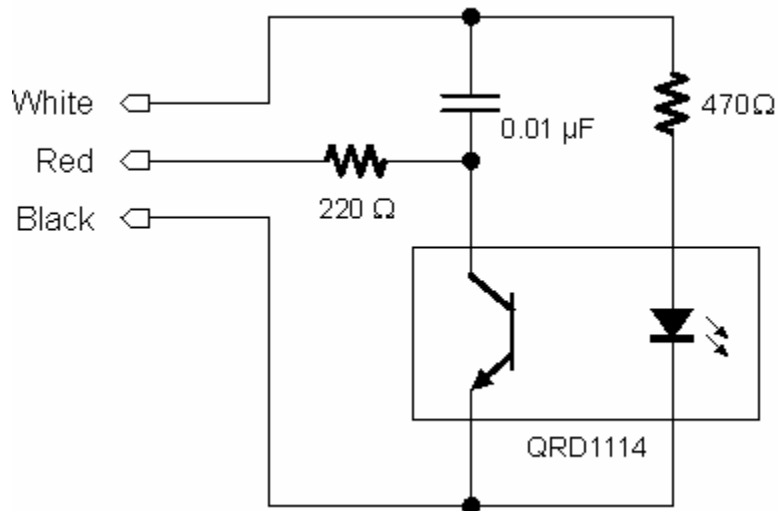
### Specifications

<b>ABSOLUTE MAXIMUM RATINGS (<math>T_A=25^{\circ}\text{C}</math> unless otherwise specified)</b>			
<b>Parameter</b>	<b>Symbol</b>	<b>Rating</b>	<b>Units</b>
Operating Temperature	$T_{\text{OPR}}$	-40 to +85	Celsius
Storage Temperature	$T_{\text{STG}}$	-40 to +85	Celsius
Lead Temperature (Solder Iron) <sup>(2,3)</sup>	$T_{\text{SOL-I}}$	240 for 5 sec	Celsius
Lead Temperature (Solder Flow) <sup>(2,3)</sup>	$T_{\text{SOL-F}}$	260 for 10 sec	Celsius
<b>EMITTER</b> Continuous Forward Current	$I_{\text{F}}$	50	mA
Reverse Voltage	$V_{\text{R}}$	5	V
Power Dissipation <sup>(1)</sup>	$P_{\text{D}}$	100	mW
<b>SENSOR</b> Collector-Emitter Voltage	$V_{\text{CEO}}$	30	V
Emitter-Collector Voltage	$V_{\text{ECO}}$		V
Power Dissipation <sup>(1)</sup>	$P_{\text{D}}$	100	mW

## Kit Packing List

1. This manual
2. QTI sensor unit

## Setting Up



## Description

The QTI sensor is activated by placing 5 V (V<sub>dd</sub>) on the W pin. This will cause current to flow through the 470 ohm resistor to the LED side of the QRD1114. IR light reflecting of the surface below will cause a change in the ability for the current to flow through the phototransistor side of the QRD1114. The transistor, in effect, behaves like an IR controlled resistance.

## Demonstration Programs

```
' -----[ Title ]-----  
-----  
' Mini-Sumo 3.1 : Line Sensor Test  
' {$STAMP BS2}  
  
' -----[ I/O Definitions ]-----  
-----  
LineSnsrPwr   CON  10 ' line sensor power  
LineSnsrIn    CON   9 ' line sensor input
```

```

' -----[ Constants ]-----
-----
ClrEOL    CON  11 ' clear to end of line (DEBUG)

' -----[ Variables ]-----
-----
Sense     VAR  Word ' sensor raw reading

' -----[ Main Code ]-----
-----
Read_Sensor:
HIGH LineSnrPwr ' activate sensor
HIGH LineSnrIn ' discharge QTI cap
PAUSE 1
RCTIME LineSnrIn, 1, Sense ' read sensor value
LOW LineSnrPwr ' deactivate sensor

Display:
DEBUG Home
DEBUG "Sensor ", CR
DEBUG "-----", CR
DEBUG DEC Sense, ClrEOL
PAUSE 100
GOTO Read_Sensor

```

## Dimensions

PCB Length: 1"  
 Overall Length: 1 ¼"  
 PCB Width: 3/8"  
 Thickness: 5/16"

## Trouble Shooting Tips

Make sure that the QTI sensor is properly installed by matching up the pins. The “B” connects to Vss. The “R” connects to pin 9 of the BASIC Stamp and the “W” connects to pin 10 of the BASIC Stamp.

## BASIC Stamp support:

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