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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

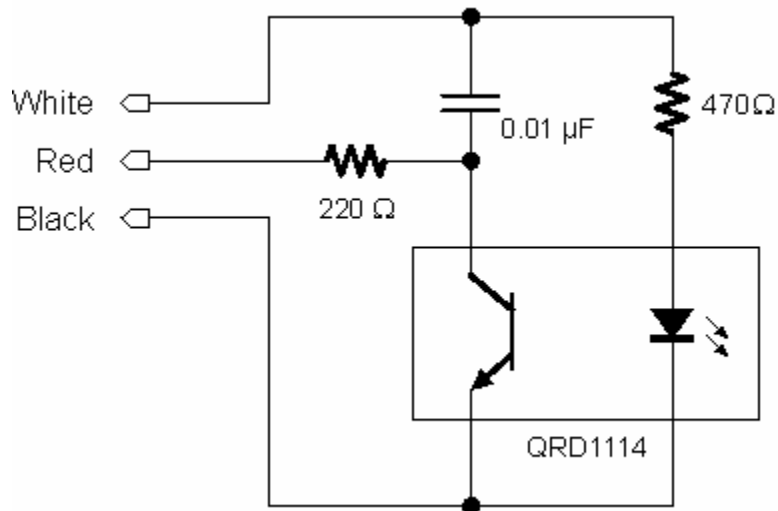
Specifications

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