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QTI Line Sensor (#550-27401)

Introduction

The Parallax QTI senor 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=25c 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_{SOL-I}	240 for 5 sec	Celsius
Lead Temperature (Solder Flow)(2,3)	T_{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
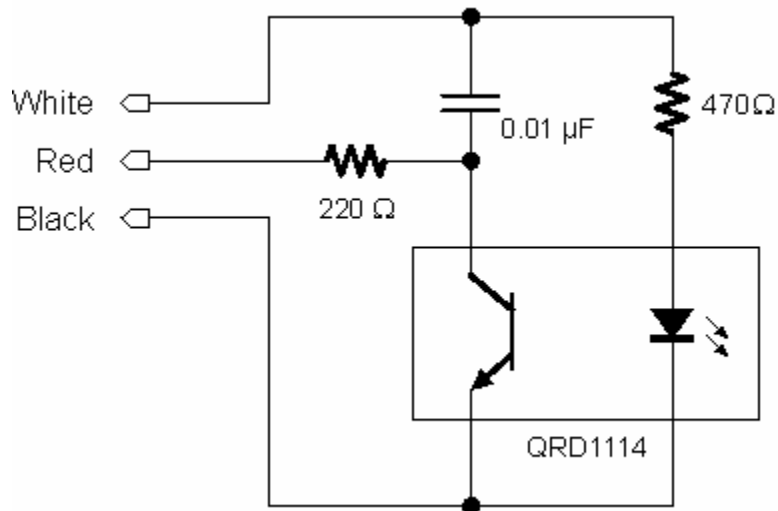
Description

The QTI sensor is activated by placing 5 V (Vdd) 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 LineSnsrPwr ' activate sensor
HIGH LineSnsrIn ' discharge QTI cap
PAUSE 1
RCTIME LineSnsrIn, 1, Sense ' read sensor value
LOW LineSnsrPwr ' 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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