

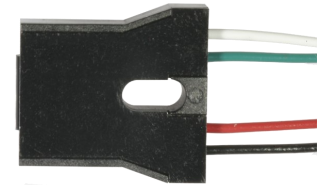
# Reflective Line Reader Sensor

Type OPB739RWZ



## Features:

- Focused for maximum sensitivity
- Phototransistor Output
- 650nm Visible Red LED to optimize detection of dye based inks
- Low-cost plastic housing
- 24" minimum 26AWG wire leads
- Optimal operating distance range 0.015" [.38mm] to 0.045" [1.14mm]



## Description:

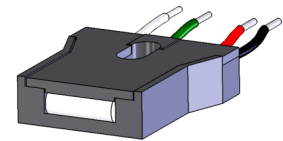
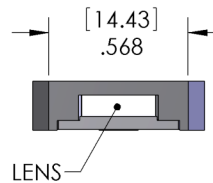
The **OPB739RWZ** is a reflective line reader sensor. The sensor utilizes a visible red (650nm) LED and an NPN silicon phototransistor mounted side by side on converging optical axes in a black plastic housing. The converging light beam makes this sensor capable of detecting line widths as small as 0.004" [0.1mm] at the optimum distance of 0.030" [0.76mm] from the target. The red LED maximizes the reflected signal contrast of black lines on white backgrounds. Recommended line spacing is .050" minimum.

This sensor can be used with Optek's OCB100CZ auto calibration module to reduce variability from sensor to sensor and to achieve a digital output.

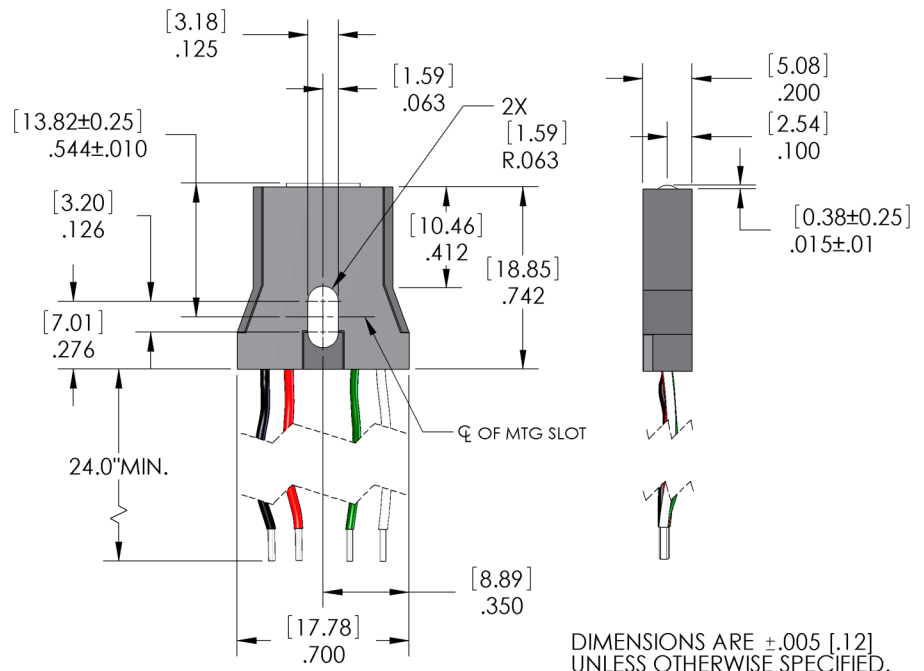
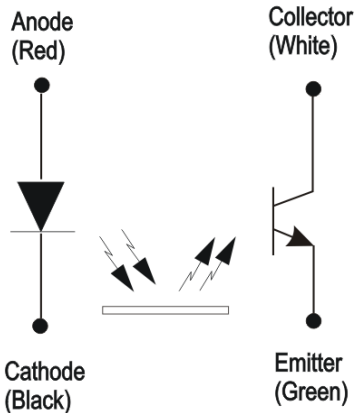
Custom electrical, wire, cabling and connectors are available. Contact your local representative or OPTEK for more information.

## Applications:

- Line Reading
- Low Resolution Bar Code Sensing
- Paper edge detection
- Mark detection
- Reflective Optical Encoders



## OPB739RWZ



General Note  
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

OPTEK Technology, Inc.  
1645 Wallace Drive, Carrollton, TX 75006 | Ph: +1 972 323 2200  
www.optekinc.com | www.ttelectronics.com

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| Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ unless otherwise noted)   |                                      |      |     |      |               |   |
|---|--------------------------------------|------|-----|------|---------------|---|
| Storage and Operating Temperature Range                                       |                                      |      |     |      |               | -40° C to +85° C  |
| <b>Input LED</b>  |                                      |      |     |      |               |   |
| Forward DC Current  |                                      |      |     |      |               | 40 mA   |
| Reverse DC Voltage  |                                      |      |     |      |               | 2 V   |
| Power Dissipation   |                                      |      |     |      |               | 100 mW  |
| <b>Output Phototransistor</b>   |                                      |      |     |      |               |   |
| Collector-Emitter Voltage   |                                      |      |     |      |               | 30 V  |
| Emitter-Collector Voltage   |                                      |      |     |      |               | 5 V   |
| Power Dissipation   |                                      |      |     |      |               | 100 mW  |
| Electrical Characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise noted) |                                      |      |     |      |               |   |
| SYMBOL  | PARAMETER                            | MIN  | TYP | MAX  | UNITS         | TEST CONDITIONS   |
| <b>Input IR LED</b>   |                                      |      |     |      |               |   |
| $V_F$   | Forward Voltage                      | 1.2  | 2.0 | 2.3  | V             | $I_F = 20\text{ mA}$  |
| $I_R$   | Reverse Current                      | -    | -   | 100  | $\mu\text{A}$ | $V_R = 2\text{ V}$  |
| $\lambda_P$   | Peak Emission Wavelength             | -    | 650 | -    | nm            | $I_F = 20\text{ mA}$  |
| <b>Output Phototransistor</b>   |                                      |      |     |      |               |   |
| $V_{(BR)CEO}$   | Collector Emitter Breakdown Voltage  | 30   | -   | -    | V             | $I_C = 100\ \mu\text{A}$  |
| $V_{(BR)ECO}$   | Emitter Collector Breakdown Voltage  | 5    | -   | -    | v             | $I_E = 100\ \mu\text{A}$  |
| $I_{CEO}$   | Collector Dark Current               | -    | -   | 100  | nA            | $V_{CE} = 10\text{ V}, I_F = 0$   |
| $T_r$   | Rise Time                            | -    | 300 | -    | $\mu\text{s}$ | $V_{CE} = 5\text{ Volts}^{(3)}$   |
| $T_f$   | Fall Time                            | -    | 300 | -    | $\mu\text{s}$ | $I_C = 1\text{ mA}$<br>$R_L = 20\text{K}\Omega$                                       |
| <b>Coupled Characteristics</b>  |                                      |      |     |      |               |   |
| $I_{C(ON)}$   | On-State Collector Current           | 0.25 | -   | -    | mA            | $d = 0.030'' (.76\text{ mm})^{(1)(2)}$<br>$I_F = 20\text{ mA}, V_{CE} = 5\text{ V}$   |
| $V_{CE(SAT)}$   | Collector Emitter Saturation Voltage | -    | -   | 0.4  | V             | $d = 0.030'' (.76\text{ mm})^{(1)(2)}$<br>$I_C = 50\ \mu\text{A}, I_F = 20\text{ mA}$ |
| $I_{CX}$  | Crosstalk Collector Current          | -    | -   | 0.05 | mA            | $I_F = 20\text{ mA}, V_{CE} = 5\text{ V}$<br>No reflective test surface present       |

**Notes:**

1. "d" is the distance from the assembly's lens surface to the reflective surface.
2. Measured using 90% diffuse reflectance white test card as the reflecting surface.
3. Typical values by design. Rise and Fall times are not tested.
4. Methanol or Isopropanol are recommended as cleaning agents. Plastic housing is soluble in chlorinated hydrocarbons and ketones.

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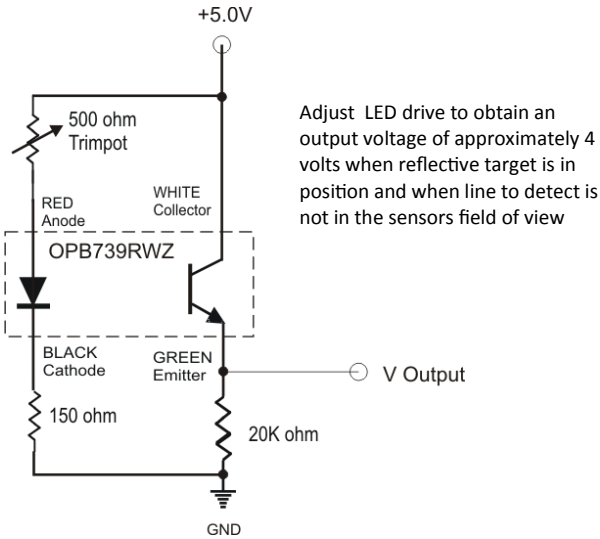
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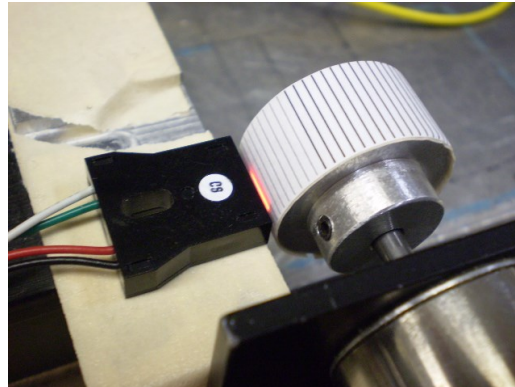
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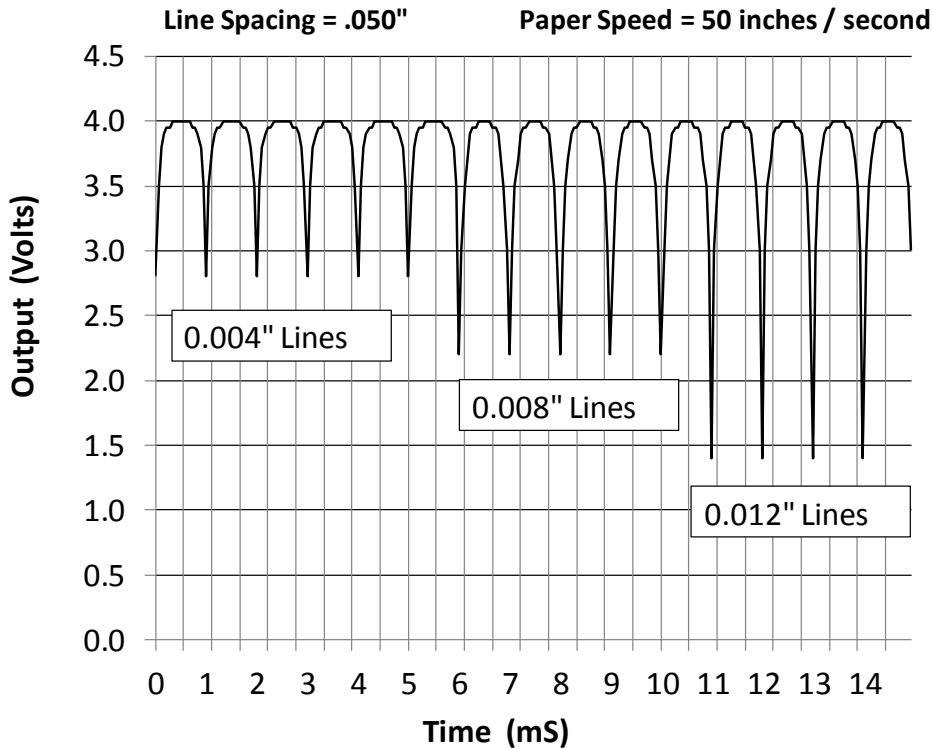
## Typical Drive Circuit



Example reflective target with 0.004", 0.008", and .012" line widths spaced 0.050" apart



## Typical Output Voltage vs Time



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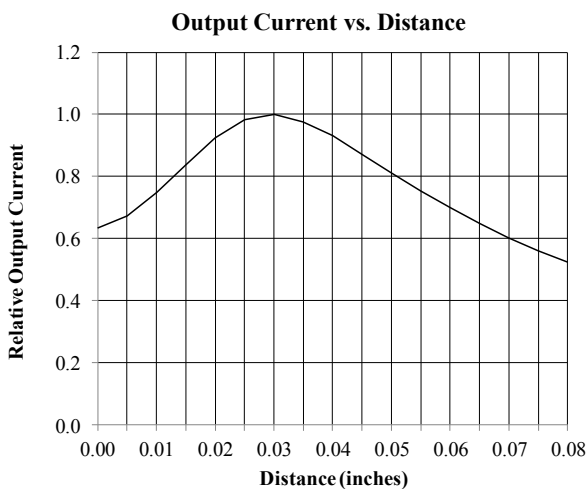
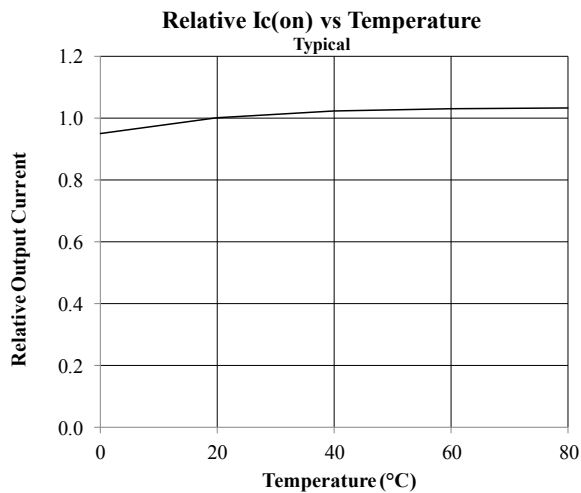
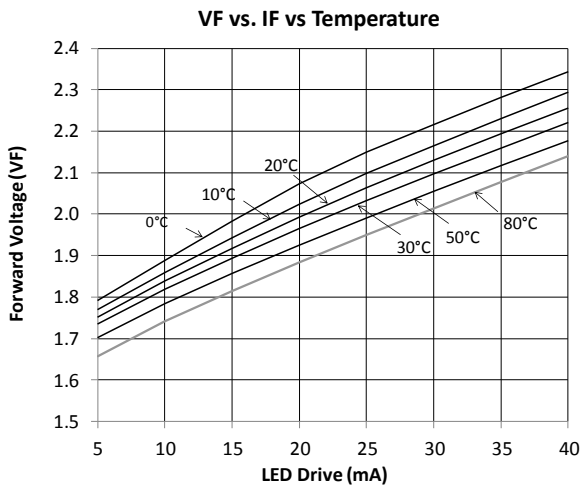
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## Typical Performance Curves



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