

# Reflective Transducer STRT900

## REFLECTIVE EMITTER SENSORS IN 3 RATINGS

- Combines high output L.E.D. and sensitive phototransistor in a single, compact package — interfaces with IC power levels.
- Stable characteristics over a wide temperature range.
- Phototransistor sensitive over wide radiation range of 0.4 to 1.1 microns.
- Ideal for recognition of marks, parts, distance or movement.

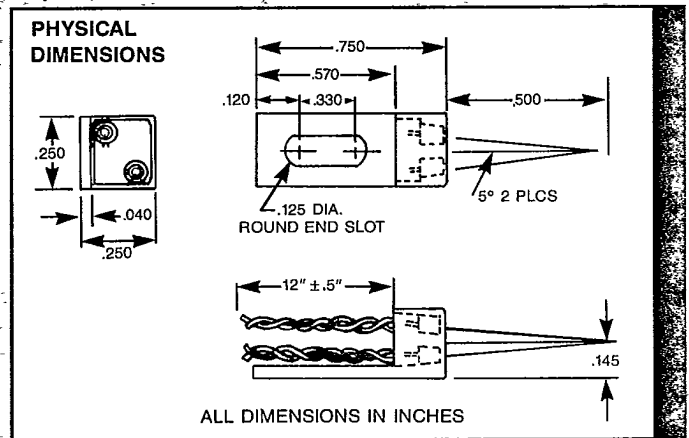
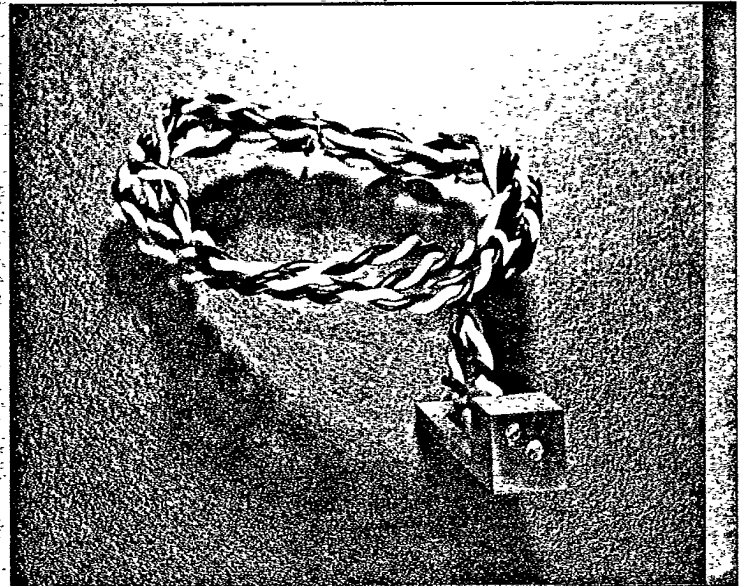
Sensor Technology's Series 900 Reflective Transducers combine a high output gallium arsenide infrared emitting diode (L.E.D.) and a sensitive silicon NPN phototransistor in a compact and rugged package.

As both the radiation surface of the L.E.D. and the sensing face of the phototransistor are positioned on the same perpendicular plane, the unit only responds to radiation from the L.E.D. source when a reflective surface comes into the field of view of the phototransistor.

When biased in the forward direction, the L.E.D.'s intense and narrow radiation bandwidth peaks well within the 0.4 to 1.1 micron sensitivity range of the phototransistor.

It is ideal for applications where fast, sensitive response to a reflective impulse is required, such as in end-of-tape beginning-of-tape, character recognition, mark sensing, and optical ignition.

See the reverse side of this sheet for other configurations in Sensor Technology's wide line of Reflective Transducers.



## ELECTRICAL CHARACTERISTICS @ 25°C

| PARAMETER  | SYMBOL        | UNITS           | STRT 900 - 1                 |      |      | STRT 910 - 2               |      |      | STRT 920 - 3*                |      |      |
|--|---------------|-----------------|------------------------------|------|------|----------------------------|------|------|------------------------------|------|------|
|  |               |                 | MIN.                         | TYP. | MAX. | MIN.                       | TYP. | MAX. | MIN.                         | TYP. | MAX. |
| LED Forward Voltage @ $I_F = 50\text{mA}$  | $V_F$         | Volts           |                              |      | 2.0  |                            | 1.5  | 2.0  |                              | 1.5  | 2.0  |
| Collector Breakdown @ $I_C = 100\mu\text{A}$   | $V_{BR(CEO)}$ | Volts           | 10                           |      |      | 50                         |      |      | 15                           |      |      |
| Emitter Breakdown @ $I_E = 100\mu\text{A}$   | $V_{BR(CEO)}$ | Volts           | 5                            |      |      | 7                          |      |      | 7                            |      |      |
| Light Current @ $V_{CE} = 5\text{V}$ , LED $I_F = 30\text{mA}$                                       | $I_L$         | mA              | 0.04                         | 0.07 |      | 0.125                      | 0.20 |      | 2.0                          | 4.0  |      |
| Dark Current @ $V_{CE}$ as shown, $I_F = 0$ , $H = 0$  | $I_D$         | nA              | 1000 @ $V_{CE} = 10\text{V}$ |      |      | 25 @ $V_{CE} = 30\text{V}$ |      |      | 1000 @ $V_{CE} = 10\text{V}$ |      |      |
| Light Current Rise Time (Typ.)<br>$V_{CC} = 5\text{V}$ , $I_C = 1\text{mA}$ , $R_L = 1\text{K Ohms}$ | $t_r$         | $\mu\text{sec}$ | 4                            |      |      | 5                          |      |      | 25                           |      |      |

\*Sensor is a photodarlington.

Electrically and mechanically interchangeable with Spectronix SPX-1180.

- 1
- 2
- 3

Lead Identification:

- STRT-900-1 Col. brown, E, blk
- STRT-910-2 Col. orange, E, blk
- STRT-920-3 Col. yellow, E, blk

L.E.D. Red — Anode  
BLK — Cathode

## Reflective Transducers

# Check this listing of Sensor Technology Reflective Transducers . . .

The complete line of the most popular package configurations and ratings.

### REFLECTIVE TRANSDUCERS Optical Electrical Characteristics (25°C)

| PARAMETER      | LED FORWARD DROP      |     |                | LED REVERSE BREAKDOWN  |     | SENSOR LIGHT CURRENT                                       |     |                |      | SENSOR DARK CURRENT                                  |          | COLLECTOR BREAKDOWN     |       | EMITTER BREAKDOWN       | SENSOR CURRENT RISE TIME  |
|----------------|-----------------------|-----|----------------|------------------------|-----|--|-----|----------------|------|--|----------|-------------------------|-------|-------------------------|---|
|                | @ I <sub>F</sub> (ma) |     |                | I <sub>R</sub> = 10 μA |     | @ I <sub>F</sub> (ma) @ d (in.)<br>V <sub>CE</sub> = 5V(E) |     |                |      | @ I <sub>F</sub> = 0 @ H = 0<br>V <sub>CE</sub> = 5V |          | I <sub>C</sub> = 100 μA |       | I <sub>E</sub> = 100 μA | @ I <sub>C</sub> = 100 μA V <sub>CC</sub> = 5V<br>R <sub>L</sub> = 1000 Ω |
| SYMBOL         | V <sub>F</sub>        |     |                | BV <sub>R</sub>        |     | I <sub>L</sub>   |     |                |      | I <sub>D</sub>                                       |          | BV <sub>CEO</sub>       |       | BV <sub>ECO</sub>       | tr  |
| UNIT           | Volts                 |     |                | Volts                  |     | uA   |     |                |      | nA   |          | Volts                   |       | Volts                   | usec  |
| DARLINGTON     | Typ                   | Max | I <sub>F</sub> | Min                    | Typ | Min  | Max | I <sub>F</sub> | d    | Typ  | Max      | Min                     | Typ   | Min                     | Typ   |
| STRD-70 F      | 1.25                  | 1.8 | 60             | 3                      | 5.5 | 50   |     | 50             | 0.40 | 5  | 100      | 30(D)                   | 55(D) | 5                       | 600   |
| STRD-70/(B)    | 1.25                  | 1.8 | 60             | 3                      | 5.5 | 50   |     | 50             | 0.40 | 5  | 100      | 30(D)                   | 55(D) | 5                       | 600   |
| STRD-850       | 1.5                   | 1.8 | 50             | 3                      | 5   | 250  |     | 50             | 0.40 | 10   | 200      | 12                      | 50(D) | 5                       | 600   |
| TRANSISTOR     |                       |     |                |                        |     |  |     |                |      |  |          |                         |       |                         |   |
| STRT-850       | 1.5                   | 1.8 | 50             | 3                      | 5   | 20   |     | 50             | 0.40 | 10   | 200      | 12                      | 50(D) | 5                       | 60  |
| STRT-850/F(B)  | 1.5                   | 1.8 | 50             | 3                      | 5   | 20   |     | 50             | 0.40 | 10   | 100      | 12                      | 50(D) | 5                       | 60  |
| STRT-850A      | 1.8                   | 1.5 | 50             | 3                      | 5   | 60   | 180 | 50             | 0.40 | 10   | 100      | 12                      | 50(D) | 5                       | 60  |
| STRT-850A/F(B) | 1.5                   | 1.8 | 50             | 3                      | 5   | 60   | 180 | 50             | 0.40 | 10   | 100      | 12                      | 50(D) | 5                       | 60  |
| STRT-850B      | 1.5                   | 1.8 | 50             | 3                      | 5   | 80   | 160 | 50             | 0.40 | 10   | 100      | 12                      | 50(D) | 5                       | 60  |
| STRT-850B/F(B) | 1.5                   | 1.8 | 50             | 3                      | 5   | 80   | 160 | 50             | 0.40 | 10   | 100      | 12                      | 50(D) | 5                       | 60  |
| STRT-900-1     |                       | 2.0 | 50             | 2                      |     | 40   |     | 30             | 0.50 |  | 1000@10V | 10                      |       | 5                       | 4   |
| STRT-910-2     |                       | 2.0 | 50             | 2                      |     | 125  |     | 30             | 0.50 |  | 25@30V   | 50                      |       | 7                       | 5   |
| STRT-920-3     |                       | 2.0 | 50             | 2                      |     | 2000   |     | 30             | 0.50 |  | 1000@10V | 15                      |       | 7                       | 25(C)   |

- A Maximum Temperature -40°C to -100°C (Operating and Storage)
- B The "F" suffix denotes units with an infrared bandpass filter over the phototransistor to permit operation within specifications in the presence of stray fluorescent or other short wave length lighting
- C R<sub>L</sub> = 100 Ω

- D I<sub>C</sub> = 1mA pulsed
- E STRD 70 through STRT-850B/F using a reflective surface of Eastman Kodak for equivalent neutral white paper with 90% diffuse reflectance. The STRT-900 series uses a mirror surface