

# ASDL-6770

## High Performance Silicon NPN Phototransistor in Side Look Package



## Data Sheet

### Description

ASDL-6770 is a silicon phototransistor encapsulated in clear molded Side Look package. It has high sensitivity with low dark current and fast response time. Collector is denoted by a flat on the packaging diagram and the shorter of the two leads. This device matches with infrared emitter ASDL-4770 and is ideal for low cost, high volume applications.

### Features

- Clear Side Look Package
- Wide spectral response
- High Sensitivity
- High Speed
- Low Dark Current
- Narrow Viewing Angle
- Low Cost
- Lead Free & ROHS Compliant
- Available in Tape & Reel

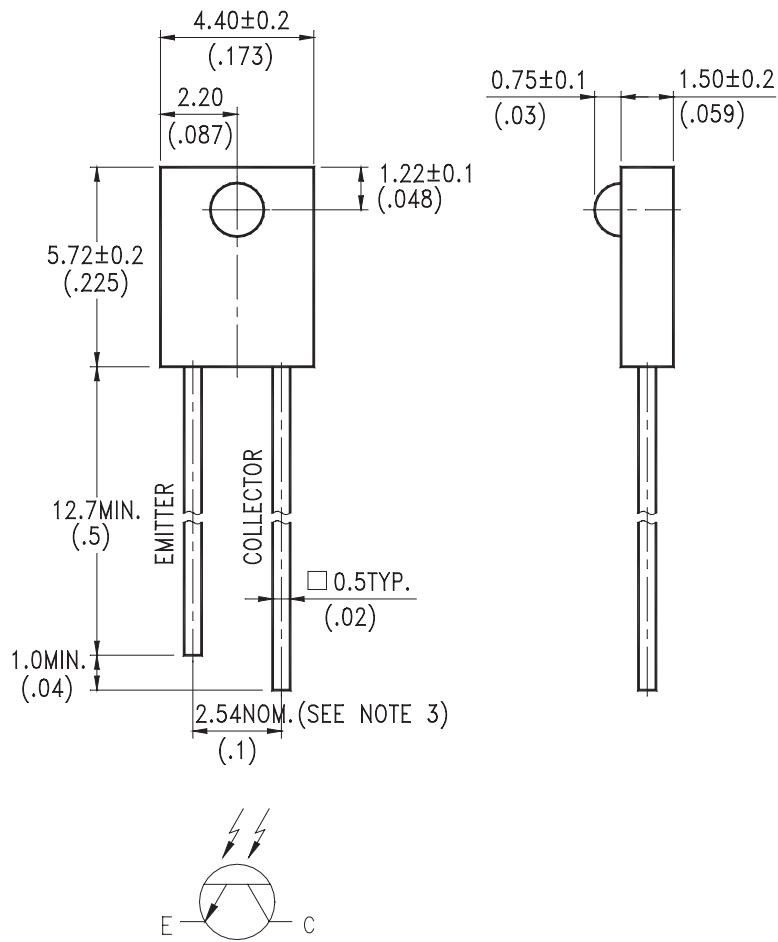
### Applications

- Detector in Consumer Electronics
- Detector Industrial Electronics & Equipment
- Coin counters
- Position sensing
- IR Data Communication
- Photo Interrupter

## Ordering Information

| Part Number   | Lead Form | Color | Packaging   | Shipping Option |
|---------------|-----------|-------|-------------|-----------------|
| ASDL-6770-C22 | Straight  | Clear | Tape & Reel | 4000pcs         |
| ASDL-6770-C41 |           |       | Bulk        | 20Kpcs / Carton |

## Package Dimensions



### Notes:

- All dimensions are in millimeters (inches)
- Tolerance is  $+ 0.25 \text{ mm}$  (.010") unless otherwise noted
- Lead spacing is measured where leads emerge from package
- Specifications are subject to change without notice.

### Absolute Maximum Ratings at $T_A=25^\circ\text{C}$

| Parameter   | Symbol     | Min.                               | Max | Unit             |
|---|------------|------------------------------------|-----|------------------|
| Power Dissipation   | $P_{DISS}$ |                                    | 100 | mW               |
| Collector Emitter Voltage                                 | $V_{CEO}$  |                                    | 30  | V                |
| Emitter Collector Voltage                                 | $V_{EC0}$  |                                    | 5   | V                |
| Operating Temperature                                     | $T_0$      | -40                                | 85  | $^\circ\text{C}$ |
| Storage Temperature                                       | $T_S$      | -55                                | 100 | $^\circ\text{C}$ |
| Junction temperature                                      | $T_J$      |                                    | 110 | $^\circ\text{C}$ |
| Lead Soldering Temperature<br>[ .6mm (0.063") From Body ] |            | 260 $^\circ\text{C}$ for 5 seconds |     |                  |

### Electrical Characteristics at $25^\circ\text{C}$

| Parameter                              | Symbol         | Min. | Typ. | Max. | Unit                      | Condition  |
|--|----------------|------|------|------|---------------------------|--|
| Collector-Emitter Breakdown Voltage    | $V_{(BR)CEO}$  | 30   |      |      | V                         | $I_c = 1\text{mA}$<br>$E_e = 0\text{mW}/\text{cm}^2$     |
| Emitter-Collector Breakdown Voltage    | $V_{(BR)ECO}$  | 5    |      |      | V                         | $I_e = 100\mu\text{A}$<br>$E_e = 0\text{mW}/\text{cm}^2$ |
| Collector Emitter Saturation Voltage   | $V_{CE(SAT)}$  |      |      | 0.4  | V                         | $I_c = 0.1\text{mA}$<br>$E_e = 1\text{mW}/\text{cm}^2$   |
| Collector Dark Current                 | $I_{CEO}$      |      |      | 100  | nA                        | $V_{CE} = 10\text{V}$<br>$E_e = 0\text{mW}/\text{cm}^2$  |
| Thermal Resistance,<br>Junction to Pin | $R\theta_{jp}$ |      | 350  |      | $^\circ\text{C}/\text{W}$ |  |

### Optical Characteristics at $25^\circ\text{C}$

| Parameter                      | Symbol          | Min. | Typ. | Max. | Unit          | Condition  |
|--------------------------------|-----------------|------|------|------|---------------|--|
| Viewing Angle                  | $2\theta_{1/2}$ |      | 40   |      | Deg           |  |
| Wavelength of Peak sensitivity | $\lambda_{PK}$  |      | 900  |      | nm            |  |
| Spectral BandWidth             | $\Delta\lambda$ | 400  | 900  | 1100 | nm            |  |
| Rise Time                      | $t_r$           |      | 10   |      | $\mu\text{s}$ | $V_{CC} = 5\text{V}$<br>$I_c = 1\text{mA}$<br>$R_L = 1\text{K}\Omega$              |
| Fall Time                      | $t_f$           |      | 15   |      | $\mu\text{s}$ | $V_{CC} = 5\text{V}$<br>$I_c = 1\text{mA}$<br>$R_L = 1\text{K}\Omega$              |
| On State Collector Current     | $I_C(ON)$       | 1.04 |      | 2.40 | mA            | $V_{CE} = 5\text{V}$<br>$E_e = 1\text{mW}/\text{cm}^2$<br>$\lambda = 940\text{nm}$ |

Typical Electrical/Optical Characteristics Curves ( $T_A=25^\circ\text{C}$  unless otherwise indicated)

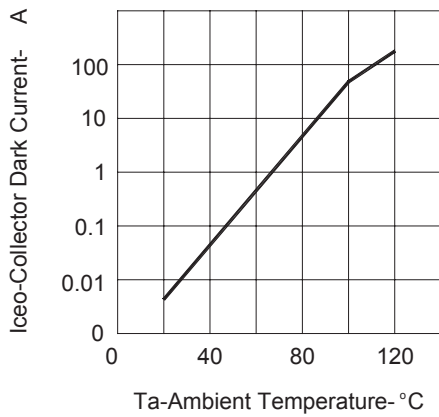


FIGURE 1. COLLECTOR DARK CURRENT VS AMBIENT TEMPERATURE

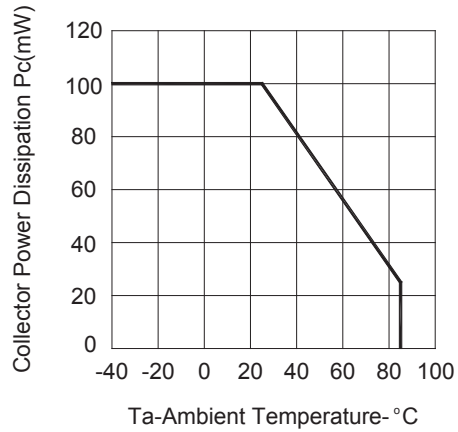


FIGURE 2. COLLECTOR POWER DISSIPATION VS AMBIENT TEMPERATURE

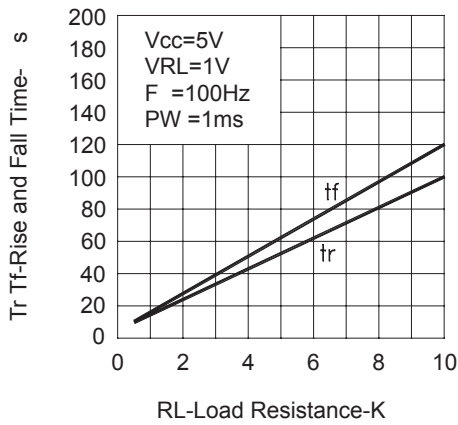


FIGURE 3. RISE AND FALL TIME VS LOAD RESISTANCE

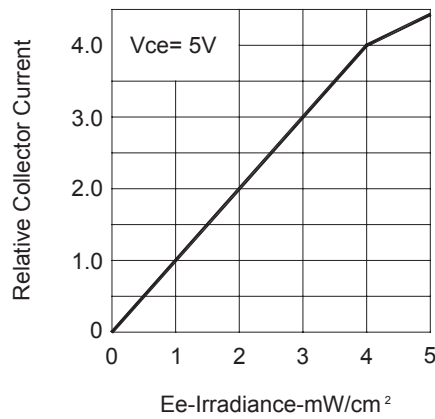


FIGURE 4. RELATIVE COLLECTOR CURRENT VS IRRADIANCE

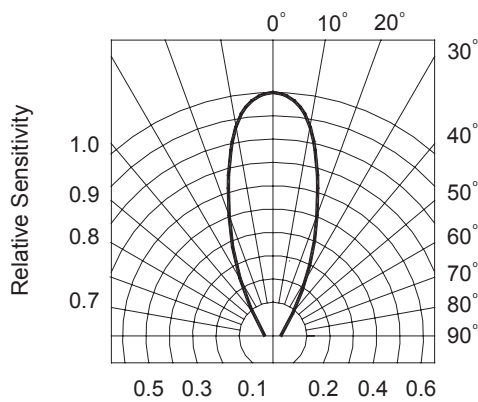


FIGURE 5. SENSITIVITY DIAGRAM

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