



T-41-63

# PHOTODARLINGTON TRANSISTOR

## PD302

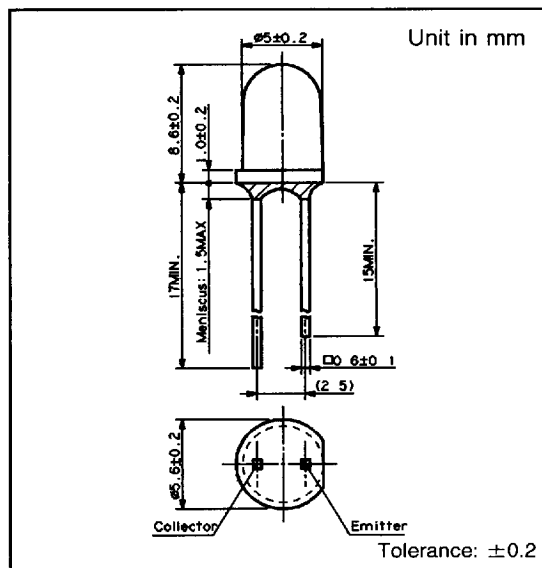
### FEATURES

- HIGH SENSITIVITY  
( $I_c = 12\text{mA}$  TYP.)
- HIGH DIRECTIVITY
- MOLDED EPOXY TYPE

### APPLICATION

- ROTARY ENCODER
- PHOTSENSOR

### Package Dimensions



### Absolute Maximum Ratings

(Ta = 25°C)

| Item                                | Symbol           | Maximum Ratings | Unit |
|-------------------------------------|------------------|-----------------|------|
| Collector Dissipation               | Pc               | 100             | mW   |
| Collector-Emitter Breakdown Voltage | V <sub>CEO</sub> | 20              | V    |
| Emitter-Collector Breakdown Voltage | V <sub>ECO</sub> | 5               | V    |
| Collector Current                   | I <sub>c</sub>   | 30              | mA   |
| Operating Temperature               | T <sub>opr</sub> | -30 ~ +85       | °C   |
| Storage Temperature                 | T <sub>stg</sub> | -30 ~ +100      | °C   |

### Electro-Optical Characteristics

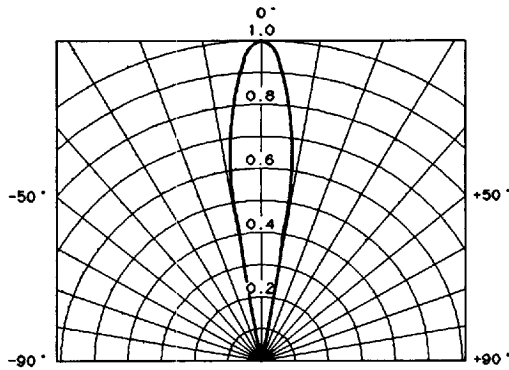
(Ta = 25°C)

| Item                                 | Symbol               | Min. | Typ. | Max. | Unit  | Conditions                                                           |
|--------------------------------------|----------------------|------|------|------|-------|----------------------------------------------------------------------|
| Collector-Emitter Dark Current       | I <sub>CEd</sub>     | —    | —    | 1    | μA    | V <sub>CE</sub> = 10V                                                |
| Photo Current                        | I <sub>c</sub>       | 2    | 12   | —    | mA    | V <sub>CE</sub> = 5V, *E <sub>e</sub> = 0.01mW/cm <sup>2</sup>       |
| Response Time                        | Leading Time         | Tr   | —    | 400  | μ sec | V <sub>CE</sub> = 10V<br>I <sub>c</sub> = 2mA, R <sub>L</sub> = 100Ω |
|                                      | Trailing Time        | Tf   | —    | 400  | μ sec |                                                                      |
| Peak Sensitivity Wavelength          | λ <sub>p</sub>       | —    | 800  | —    | nm    |                                                                      |
| Collector-Emitter Saturation Voltage | V <sub>CE(sat)</sub> | —    | 0.7  | —    | V     | I <sub>c</sub> = 5mA, *E <sub>e</sub> = 10mW/cm <sup>2</sup>         |

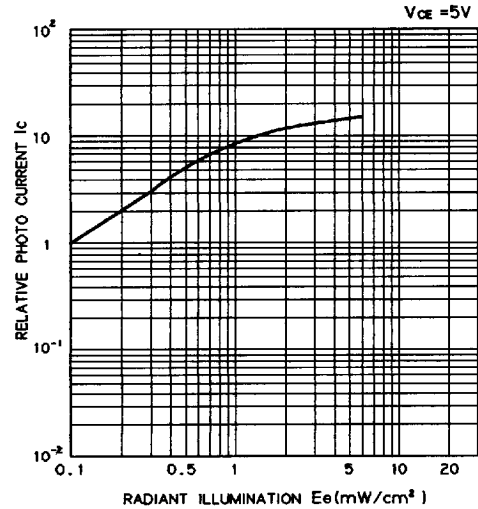
\* At color temp. 2856°K standard tungsten filament bulb.

T-41-63

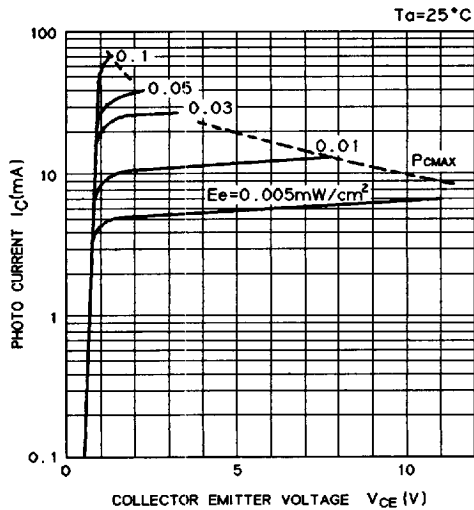
■ DIRECTIVITY CHARACTERISTICS



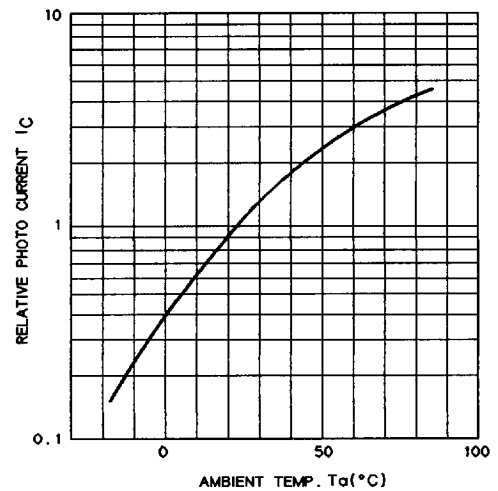
■ RELATIVE PHOTO CURRENT vs. RADIANT ILLUMINATION



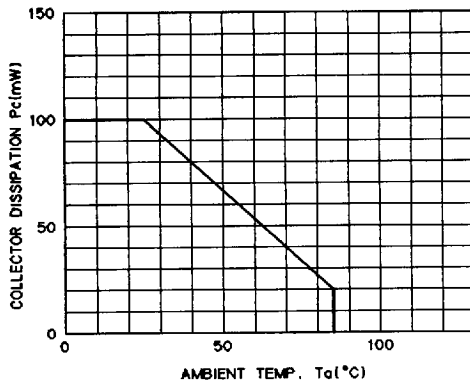
■ PHOTO CURRENT vs. COLLECTOR EMITTER VOLTAGE



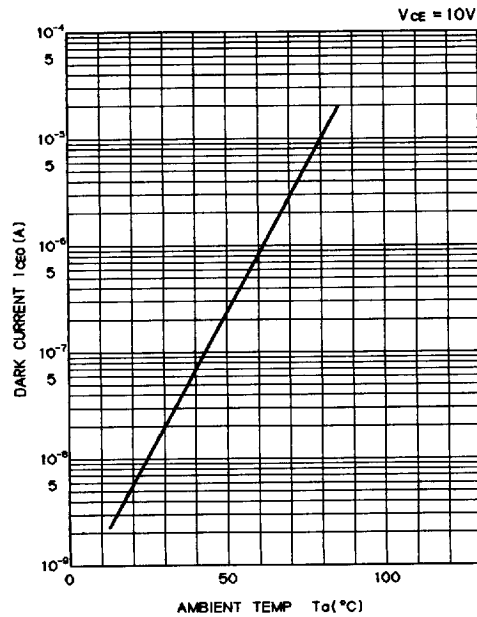
■ PHOTO CURRENT vs. AMBIENT TEMP.



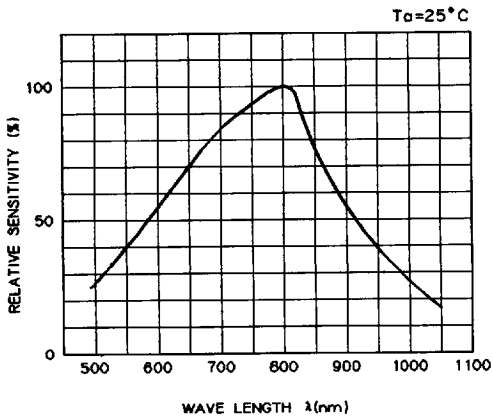
■ COLLECTOR DISSIPATION vs. AMBIENT TEMP.



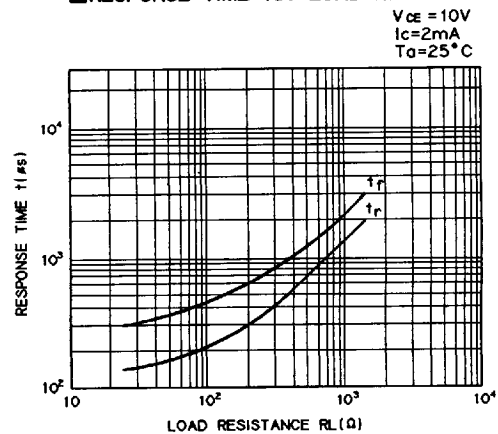
■ DARK CURRENT vs. AMBIENT TEMP.



■ SPECTRAL SENSITIVITY CHARACTERISTICS



■ RESPONSE TIME vs. LOAD RESISTANCE



■ RESPONSE TIME MEASURING CIRCUIT

