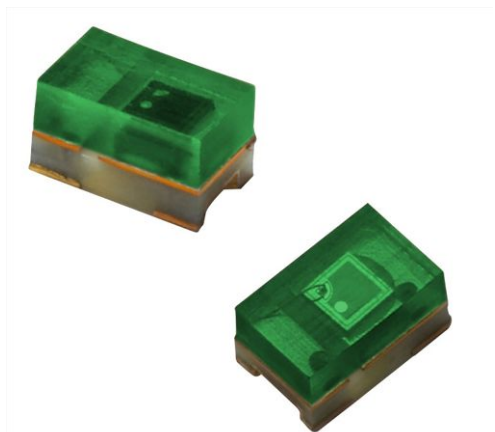


## Ambient Light Sensor



### DESCRIPTION

TEMD6200FX01 is a high speed and high sensitive PIN photodiode in a miniature flat plastic package. Its spectral sensitivity is closely matched to the human eye.

### FEATURES

- Package type: Surface mount
- Package form: 0805
- Dimensions (L x W x H in mm): 2 x 1.25 x 0.85
- Radiant sensitive area (in mm<sup>2</sup>): 0.27
- AEC-Q101 qualified
- High photo sensitivity
- Adapted to human eye responsivity
- Angle of half sensitivity:  $\phi = \pm 60^\circ$
- Floor life: 168 h, MSL 3, acc. J-STD-020
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



### APPLICATIONS

- Automotive sensors
- Ambient light sensors
- Backlight dimming
- Mobil phones
- Notebooks
- Computers

### PRODUCT SUMMARY

| COMPONENT    | $I_{ra}$ (μA) | $\phi$ (deg) | $\lambda_{0.5}$ (nm) |
|--------------|---------------|--------------|----------------------|
| TEMD6200FX01 | 0.04          | $\pm 60$     | 430 to 610           |

#### Note

- Test condition see table "Basic Characteristics"

### ORDERING INFORMATION

| ORDERING CODE | PACKAGING     | REMARKS                      | PACKAGE FORM |
|---------------|---------------|------------------------------|--------------|
| TEMD6200FX01  | Tape and reel | MOQ: 3000 pcs, 3000 pcs/reel | 0805         |

#### Note

- MOQ: Minimum order quantity

### ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25^\circ\text{C}$ , unless otherwise specified)

| PARAMETER                           | TEST CONDITION                  | SYMBOL     | VALUE       | UNIT             |
|-------------------------------------|---------------------------------|------------|-------------|------------------|
| Reverse voltage                     |                                 | $V_R$      | 16          | V                |
| Power dissipation                   | $T_{amb} \leq 55^\circ\text{C}$ | $P_V$      | 100         | mW               |
| Junction temperature                |                                 | $T_j$      | 100         | $^\circ\text{C}$ |
| Operating temperature range         |                                 | $T_{amb}$  | -40 to +100 | $^\circ\text{C}$ |
| Storage temperature range           |                                 | $T_{stg}$  | -40 to +100 | $^\circ\text{C}$ |
| Soldering temperature               | In accordance with fig. 6       | $T_{sd}$   | 260         | $^\circ\text{C}$ |
| Thermal resistance junction/ambient |                                 | $R_{thJA}$ | 270         | K/W              |

| <b>BASIC CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified) |                                                                              |                 |      |            |      |               |
|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|-----------------|------|------------|------|---------------|
| PARAMETER                                                                                           | TEST CONDITION                                                               | SYMBOL          | MIN. | TYP.       | MAX. | UNIT          |
| Breakdown voltage                                                                                   | $I_R = 100\text{ }\mu\text{A}$ , $E = 0\text{ lx}$                           | $V_{(BR)}$      | 16   |            |      | V             |
| Reverse dark current                                                                                | $V_R = 10\text{ V}$ , $E = 0\text{ lx}$                                      | $I_{ro}$        |      | 0.1        | 5    | nA            |
| Diode capacitance                                                                                   | $V_R = 0\text{ V}$ , $f = 1\text{ MHz}$ , $E = 0\text{ lx}$                  | $C_D$           |      | 60         |      | pF            |
|                                                                                                     | $V_R = 5\text{ V}$ , $f = 1\text{ MHz}$ , $E = 0\text{ lx}$                  | $C_D$           |      | 24         |      | pF            |
| Reverse light current                                                                               | $E_e = 1\text{ mW/cm}^2$ , $\lambda = 550\text{ nm}$ ,<br>$V_R = 5\text{ V}$ | $I_{ra}$        |      | 1          |      | $\mu\text{A}$ |
|                                                                                                     | $E_v = 100\text{ lx}$ ,<br>CIE illuminant A                                  | $I_{ra}$        | 0.03 | 0.04       | 0.09 | $\mu\text{A}$ |
| Angle of half sensitivity                                                                           |                                                                              | $\phi$          |      | $\pm 60$   |      | deg           |
| Wavelength of peak sensitivity                                                                      |                                                                              | $\lambda_p$     |      | 540        |      | nm            |
| Range of spectral bandwidth                                                                         |                                                                              | $\lambda_{0.5}$ |      | 430 to 610 |      | nm            |
| Rise time                                                                                           | $U_R = 5\text{ V}$ , $R_L = 50\text{ }\Omega$ , TLMW3300                     | $t_r$           |      | 150        |      | ns            |
| Fall time                                                                                           | $U_R = 5\text{ V}$ , $R_L = 50\text{ }\Omega$ , TLMW3300                     | $t_f$           |      | 150        |      | ns            |

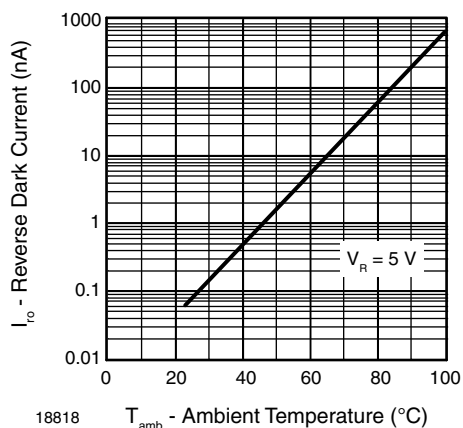
**BASIC CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

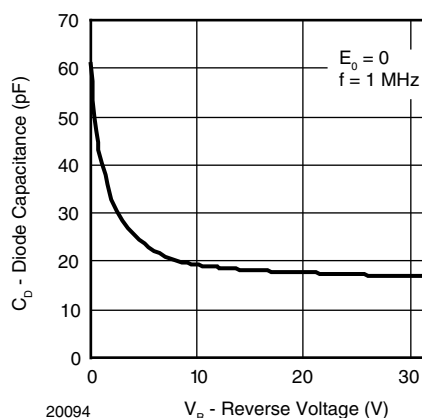


Fig. 3 - Diode Capacitance vs. Reverse Voltage

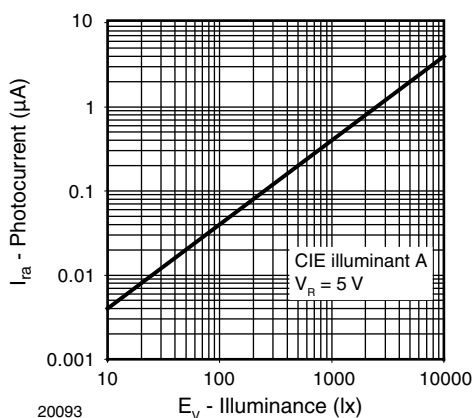


Fig. 2 - Reverse Light Current vs. Illuminance

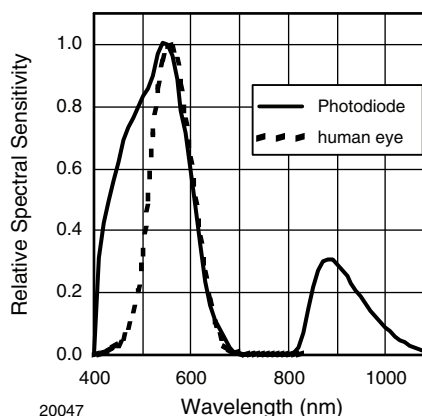


Fig. 4 - Relative Spectral Sensitivity vs. Wavelength

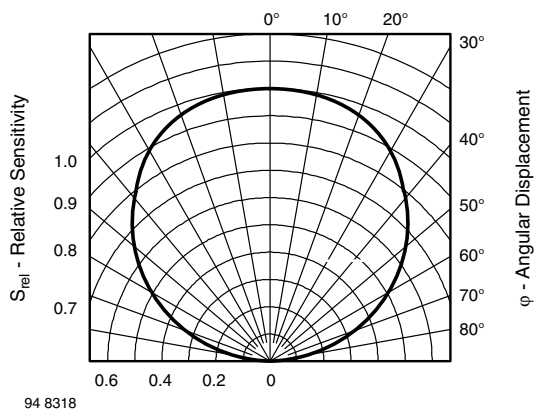


Fig. 5 - Relative Radiant Sensitivity vs. Angular Displacement

## SOLDER PROFILE

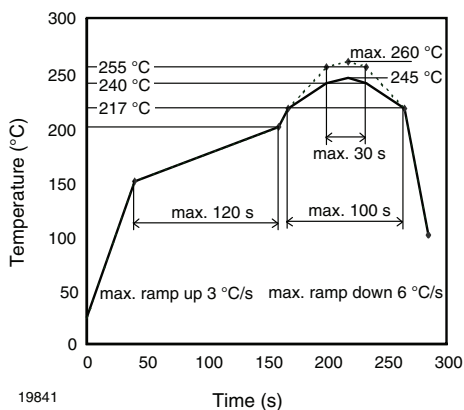


Fig. 6 - Lead (Pb)-free Reflow Solder Profile  
acc. J-STD-020

## DRYPACK

Devices are packed in moisture barrier bags (MBB) to prevent the products from moisture absorption during transportation and storage. Each bag contains a desiccant.

## FLOOR LIFE

Time between soldering and removing from MBB must not exceed the time indicated in J-STD-020:

Moisture sensitivity: Level 3

Floor life: 168 h

Conditions:  $T_{amb} < 30\text{ °C}$ ,  $RH < 60\%$

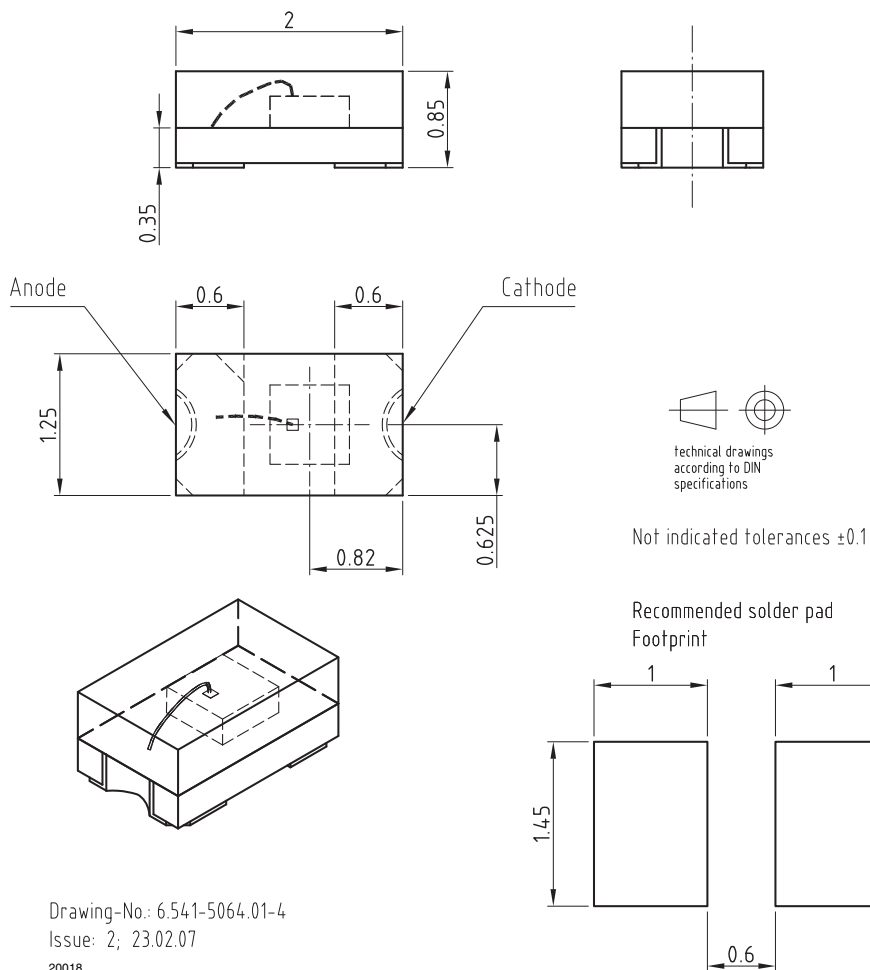
## DRYING

In case of moisture absorption devices should be baked before soldering. Conditions see J-STD-020 or label. Devices taped on reel dry using recommended conditions:

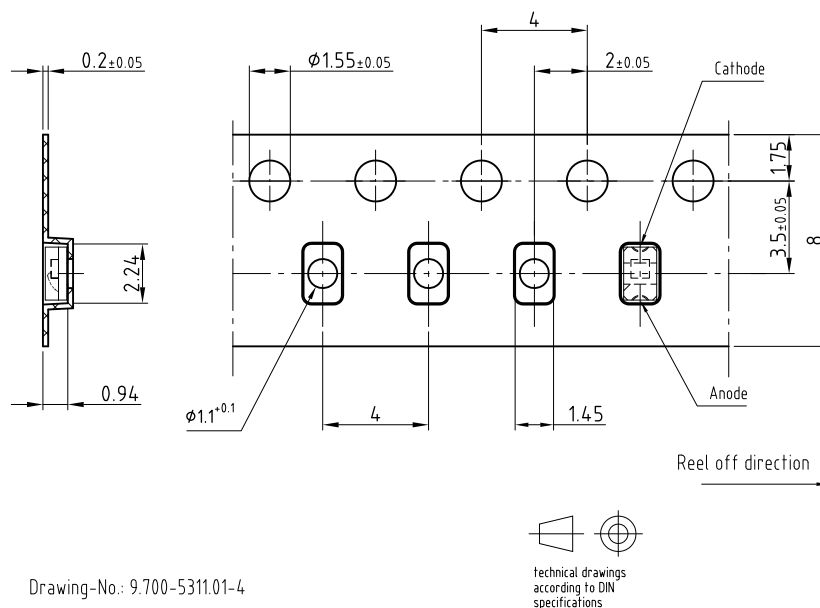
192 h at  $40\text{ °C} (+ 5\text{ °C})$ ,  $RH < 5\%$

or

96 h at  $60\text{ °C} (+ 5\text{ °C})$ ,  $RH < 5\%$ .

**PACKAGE DIMENSIONS** in millimeters


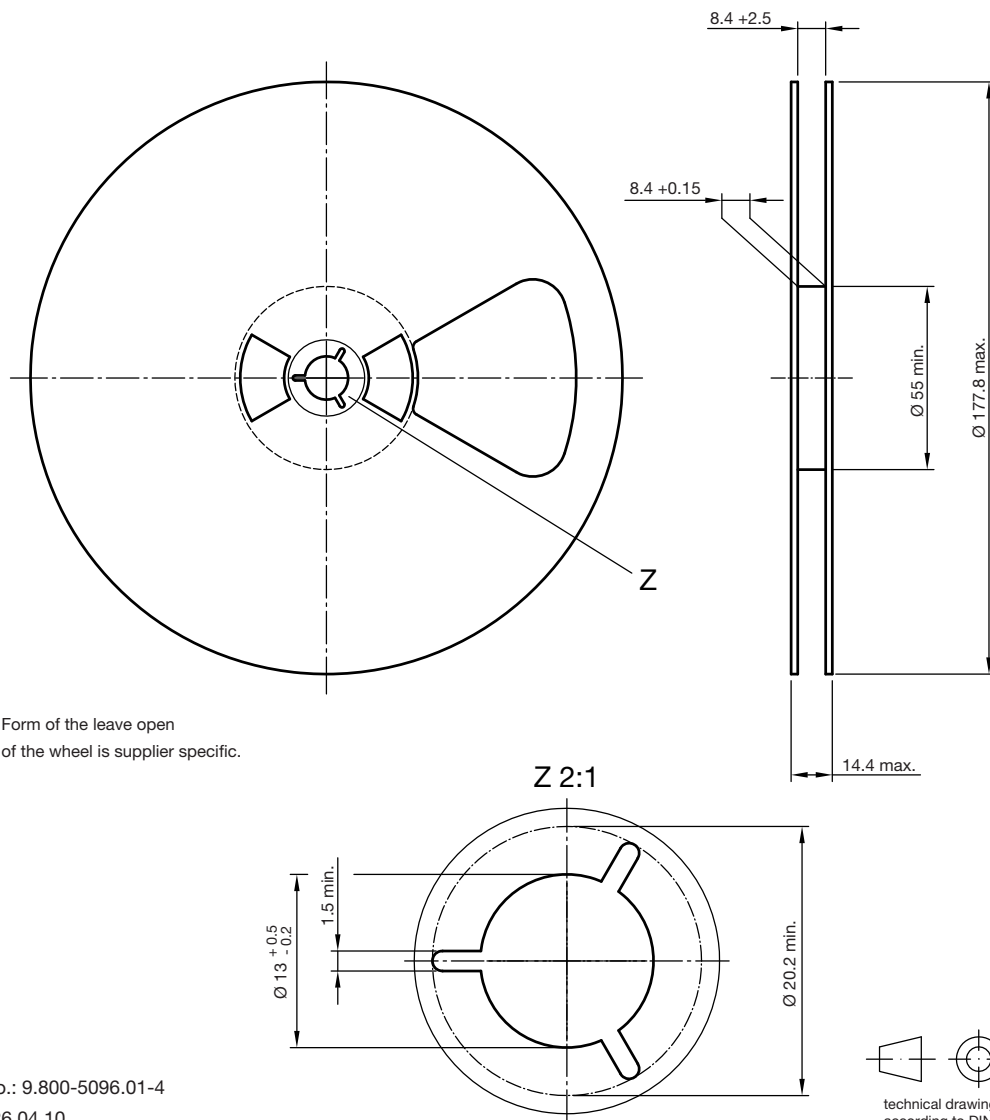
Drawing-No.: 6.541-5064.01-4  
Issue: 2; 23.02.07  
20018

**BLISTER TAPE DIMENSIONS** in millimeters


Drawing-No.: 9.700-5311.01-4  
Issue: 1; 23.02.07  
21501

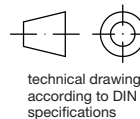


**REEL DIMENSIONS** in millimeters



Form of the leave open  
of the wheel is supplier specific.

Drawing-No.: 9.800-5096.01-4  
Issue: 2; 26.04.10  
20875





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