

FEATURES

- High Reliability
- Low Noise
- High Open Circuit Voltage as Photovoltaic Cells
- Short Switching Time
- High Spectral Sensitivity
- Wide Temperature Range
- Low Capacitance
- Usage: Visible and Near IR Ranges
- Clear Plastic Lens (SFH 2030)
- Daylight Filter Option (SFH 2030F)

DESCRIPTION

SFH 2030 and SFH 2030F are silicon planar PIN photodiodes in T1³/₄ packages. They can be used as photodiodes with reverse voltage, or as photovoltaic cells. The terminals are solder tabs with 0.1" (2.54 mm) lead spacing.

Applications include industrial electronics, light-activated switches, fiber optic transmission systems, and measurement and control.

Maximum Ratings

Operating and Storage Temperature Range (T_{OP} , T_{STG}) -55° to +100°C
 Soldering Temperature (2 mm from case bottom) (T_s) $t_s \leq 3$ s 300°C
 Reverse Voltage (V_R) 50 V
 Power Dissipation (P_{TOT}) $T_A=25^\circ\text{C}$ 100 mW

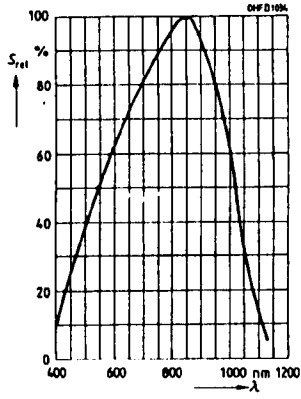
Characteristics ($T_A=25^\circ\text{C}$)

| Parameter | Symbol | Value | | Unit |
|--|------------------|-----------------------|-----------------------|----------------------------|
| | | SFH 2030 | SFH 2030F | |
| Photosensitivity ($V_R=5$ V, Standard Light A, $T=2856$ K) | S | 80(≥ 50) | | nA/lx |
| ($V_R=5$ V, $\lambda=950$ nm, $E_o=0.5$ mW/cm ²) | S | | 25(≥ 15) | μA |
| Maximum Photosensitivity Wavelength | λ_{Omax} | 850 | 900 | nm |
| Photosensitivity Spectral Range ($S=10\%$ of S_{MAX}) | λ | 400 to 1100 | 800 to 1100 | nm |
| Radiant Sensitive Area | A | 1 | 1 | mm ² |
| Radiant Sensitive Area Dimensions | L x W | 1 x 1 | 1 x 1 | mm |
| Distance, Chip Surface to Case Surface | H | 4.0 to 4.6 | 4.0 to 4.6 | mm |
| Half Angle | ϕ | ± 20 | ± 20 | Deg. |
| Dark Current ($V_R=20$ V) | I_R | 1(≤ 5) | 1(≤ 5) | nA |
| Spectral Sensitivity ($\lambda=850$ nm) | S_λ | 0.62 | 0.59 | A/W electrons photon |
| Quantum Yield ($\lambda=850$ nm) | η | 0.89 | 0.86 | |
| Open Circuit Voltage ($E_V=1000$ lx) ⁽¹⁾ | V_0 | 420(≥ 350) | | mV |
| ($E_o=0.5$ mW/cm ² , $\lambda=950$ nm) | V_0 | | 370(≥ 300) | mV |
| Short Circuit Current ($E_V=1000$ lx) ⁽¹⁾ | I_{SC} | 80 | | μA |
| ($E_o=0.5$ mW/cm ² , $\lambda=950$ nm) | I_{SC} | | 25 | μA |
| Rise and Fall Time of Photocurrent ($R_L=50$ Ω , $V_R=20$ V, $\lambda=850$ nm, $I_P=800$ μA) | t_R , t_F | 5 | 5 | ns |
| Forward Voltage ($I_F=80$ mA, $E=0$) | V_F | 1.3 | 1.3 | V |
| Capacitance ($V_R=0$ V, $f=1$ MHz, $E=0$) | C_0 | 11 | 11 | pF |
| Temperature Coefficient V_0 | TC_V | -2.6 | -2.6 | mV/K |
| Temperature Coefficient I_{SC} (Standard Light A) | TC_I | 0.18 | | %/K |
| Temperature Coefficient I_{SC} ($\lambda=950$ nm) | TC_I | | 0.2 | %/K |
| Noise Equivalent Power ($V_R=20$ V, $\lambda=850$ nm) | NEP | 2.9×10^{-14} | 2.9×10^{-14} | W/Hz |
| Detection Limit ($V_R=20$ V, $\lambda=850$ nm) | D^* | 3.5×10^{12} | 3.5×10^{12} | cm ² /Hz/W |

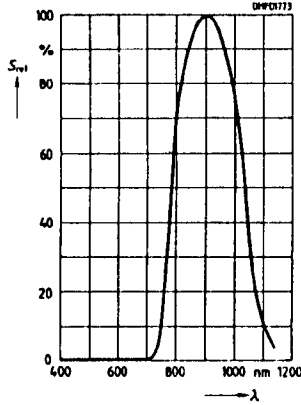
Note

1. Illuminance shown refers to unfiltered radiation of tungsten filament lamp at color temperature of 2856 K (standard light A per DIN 5033 and IEC publication 306-1).

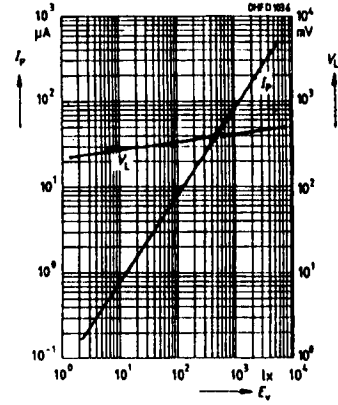
SFH 2030
Relative spectral sensitivity
 $S_{REL}=f(\lambda)$



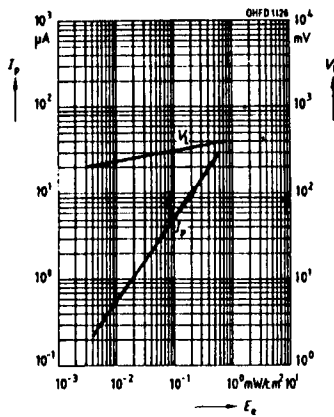
SFH 2030F
Relative spectral sensitivity
 $S_{REL}=f(\lambda)$



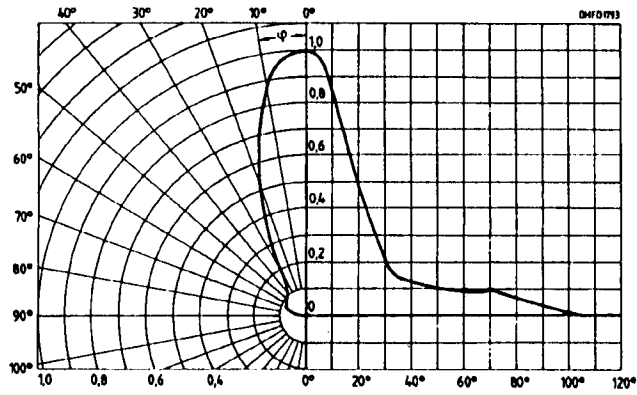
SFH 2030
Photocurrent $I_P=f(E_V)$ $V_R=5V$
Open circuit voltage $V_O=f(E_V)$



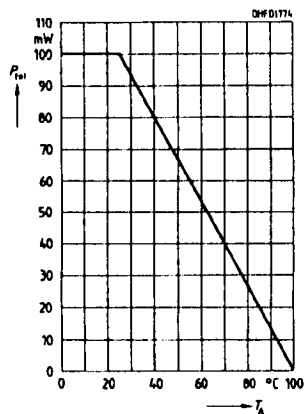
SFH 2030F
Photocurrent $I_P=f(E_e)$ $V_R=5V$
Open circuit voltage $V_O=f(E_e)$



Directional characteristic $S_{REL}=f(\varphi)$



Power dissipation $P_{TOT}=f(T_A)$



Dark current $I_D=f(V_R), E=0$

