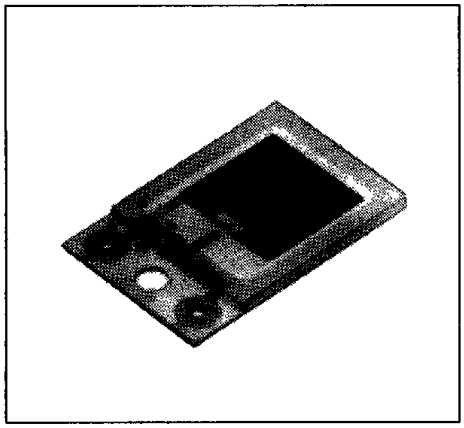
SIEMENS

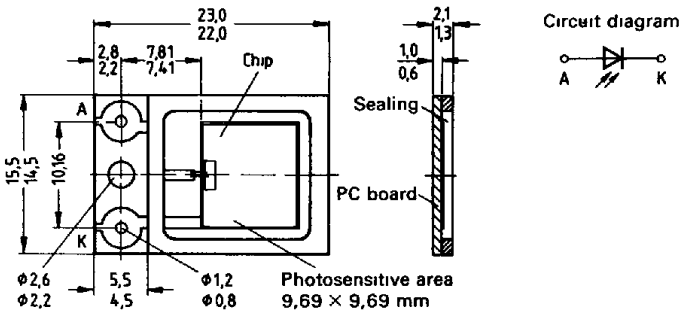
SFH 207

SILICON PIN PHOTODIODE

T-41-53



Package Dimensions mm



FEATURES

- **Package: Chip on PC Board, Fully Encapsulated**
- **High Reliability**
- **No Testable Degradation**
- **Low Noise**
- **High Open-Circuit Voltage at Voltaic Cell Operation**
- **High Cut-Off Frequency**
- **Short Switching Time**
- **Low Capacitance**
- **Good Linearity**
- **High Photosensitivity**
- **Wide Temperature Range**
- **Suitable for the Visible and the Near Infrared Range**

DESCRIPTION

The SFH 207 is a silicon photodiode fabricated in planar PIN technology. The silicon material used results in a positive front and negative back contact. These photodetectors can be used as a diode (with reverse voltage) as well as a voltaic cell.

Applications include industrial electronics, measurement and control.

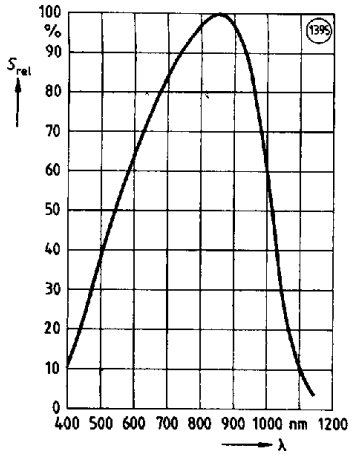
Maximum Ratings

Operating Temperature Range (T_{OP}) ..... -40°C to +80°C
Storage Temperature Range (T_{STG}) ..... -40°C to +80°C
Reverse Voltage (V_R) ..... 15 V
Total Power Dissipation (P_{TOT}) ..... 100 mW

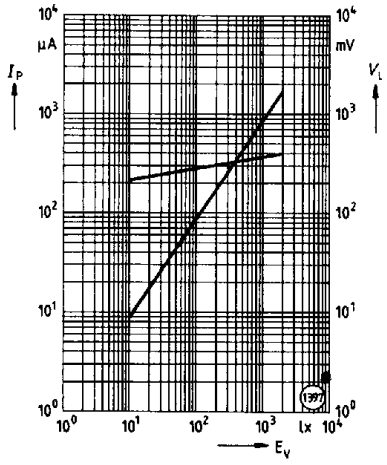
Characteristics (T_A=25°C)

Parameter	Symbol		Unit
Photosensitivity (V_R=5 V, standard light A, T=2856 K)	S	850 (≥750)	nA/lx
Wavelength of Maximum Sensitivity	λ_{SMAX}	850	nm
Spectral Range of Photosensitivity (S=10% of S_{MAX})	λ	400 – 1100	nm
Radiant Sensitive Area	A	93.9	mm²
Dimensions of Radiant Sensitive Area	L × B	9.69 × 9.69	mm × mm
Distance Chip Surface to Case Surface	H	0.5 – 0.7	mm
Half Angle	φ	±60	Deg
Dark Current (V_R=10 V, E=0)	I_R	30 (≤200)	nA
Spectral Sensitivity (λ=850 nm)	S_λ	0.6	A/W
Quantum Efficiency (λ=850 nm)	η	0 88	electrons / photon
Open-Circuit Voltage (E_V=1000 lx, standard light A, T=2856 K)	V_O	370 (≥300)	mV
Short-Circuit Current (E_V=1000 lx, standard light A, T=2856 K)	I_{SC}	810 (≥750)	µA
Rise and Fall Time of Photocurrent (R_L=50 Ω, V_{CC} =15 V, λ=830 nm, I_p=1 mA)	t_r, t_f	30	ns
Forward Voltage (I_F=100 mA, E=0)	V_F	1.2	V
Capacitance (V_R=0 V, f=1 MHz, E=0)	C	950	pF
Temperature Coefficient of V_O (standard light A)	TC_V	-2.6	mV/K
Temperature Coefficient of I_{SC} (standard light A)	TC_I	0 2	%/K
Noise Equivalent Power (V_R=10 V, λ=850 nm)	NEP	1 63 × 10^{-13}	W/√Hz
Detection Limit (V_R=10 V, λ=850 nm)	D	5 94 × 10^{12}	cm√Hz/W

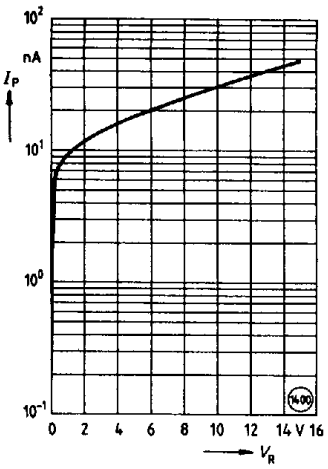
Relative spectral sensitivity
$S_{REL}=f(\lambda)$



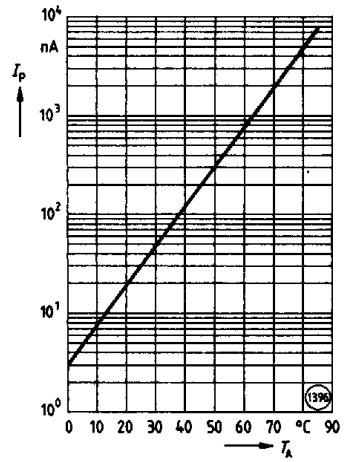
Photocurrent $I_P=f(E_V)$
open-circuit voltage $V_O=f(E_V)$



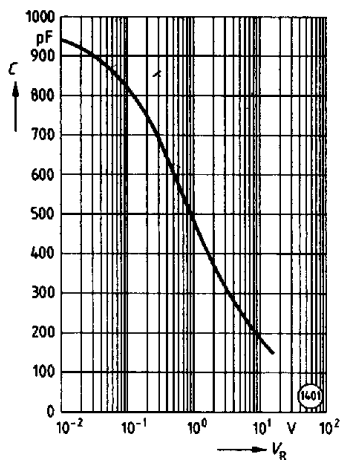
Dark current $I_R=f(V_R)$
(T_A=25°C, E=0)



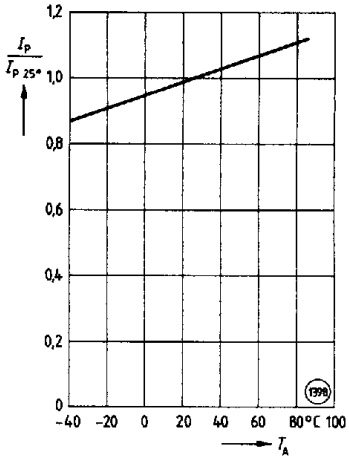
Dark current $I_R=f(T_A)$
(V_R= 10 V, E=0)



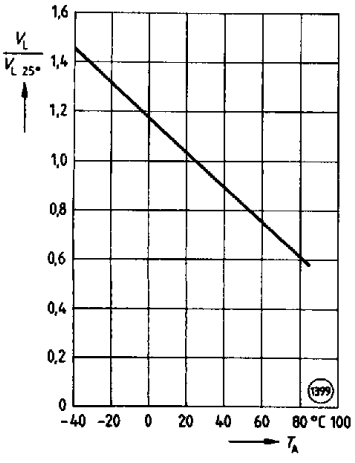
Capacitance $C=f(V_R)$
(f= 1 MHz, E=0)



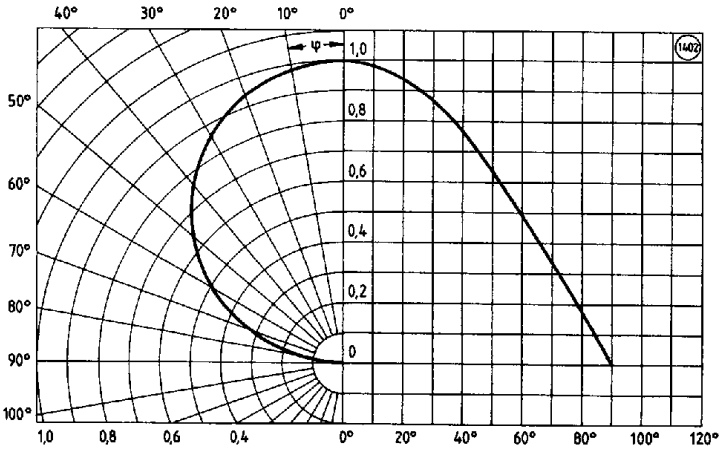
Relative photocurrent $I_P/I_{P25°}=f(T_A)$
Standard light A



Relative photocurrent $V_L/V_{L25°}=f(T_A)$
Standard light A



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



Photodiodes