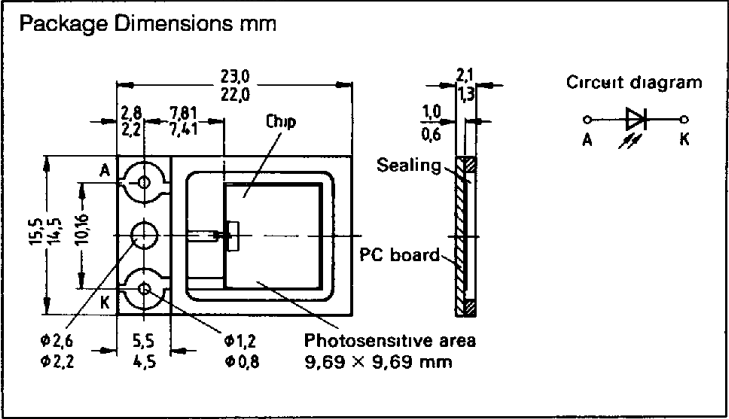
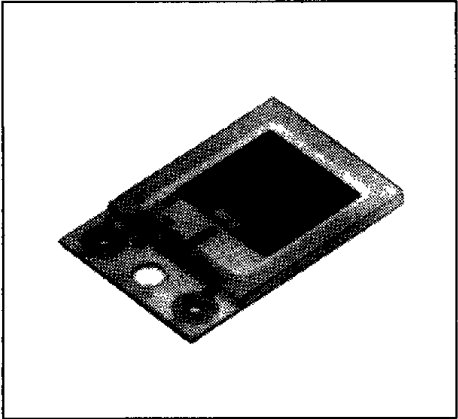


SIEMENS

SFH 207

SILICON PIN PHOTODIODE

T-41-53



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

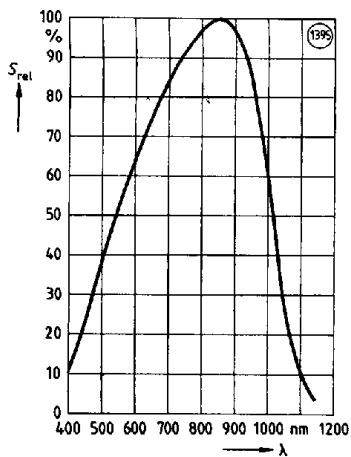
Operating Temperature Range (T_{op}) ... -40°C to +80°C
Storage Temperature Range (T_{sto}) ... -40°C to +80°C
Reverse Voltage (V_R) ... 15 V
Total Power Dissipation (P_{TOT}) ... 100 mW

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

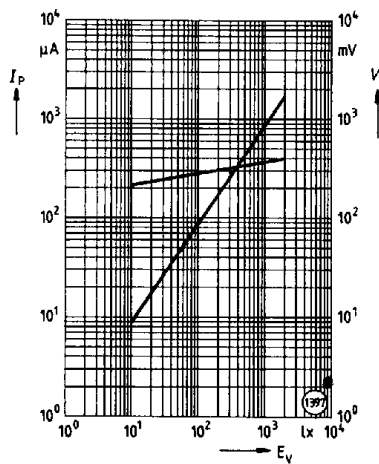
Parameter	Symbol		Unit
Photosensitivity ($V_R=5\text{ V}$, standard light A, $T=2856\text{ K}$)	S	850 (≥750)	nA/lx
Wavelength of Maximum Sensitivity	λ_{max}	850	nm
Spectral Range of Photosensitivity ($S=10\%$ of S_{max})	λ	400 – 1100	nm
Radiant Sensitive Area	A	93.9	mm ²
Dimensions of Radiant Sensitive 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 ($V_R=10\text{ V}$, $E=0$)	I_n	30 (≤200)	nA
Spectral Sensitivity ($\lambda=850\text{ nm}$)	S_λ	0.6	A/W
Quantum Efficiency ($\lambda=850\text{ nm}$)	η	0.88	electrons photon
Open-Circuit Voltage ($E_f=1000\text{ lx}$, standard light A, $T=2856\text{ K}$)	V_o	370 (≥300)	mV
Short-Circuit Current ($E_f=1000\text{ lx}$, standard light A, $T=2856\text{ K}$)	I_{sc}	810 (≥750)	μA
Rise and Fall Time of Photocurrent ($R_f=50\ \Omega$, $V_{cc}=15\text{ V}$, $\lambda=830\text{ nm}$, $I_p=1\text{ mA}$)	t_r, t_f	30	ns
Forward Voltage ($I_f=100\text{ mA}$, $E=0$)	V_f	1.2	V
Capacitance ($V_R=0\text{ V}$, $f=1\text{ MHz}$, $E=0$)	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 ($V_R=10\text{ V}$, $\lambda=850\text{ nm}$)	NEP	1.63×10^{-13}	W/√Hz
Detection Limit ($V_R=10\text{ V}$, $\lambda=850\text{ nm}$)	D	5.94×10^{-12}	cm√Hz/W

T-41-53

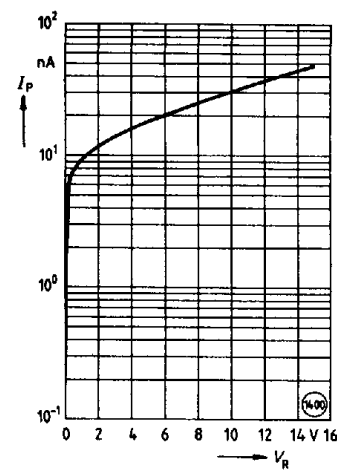
Relative spectral sensitivity
 $S_{REL} = f(\lambda)$



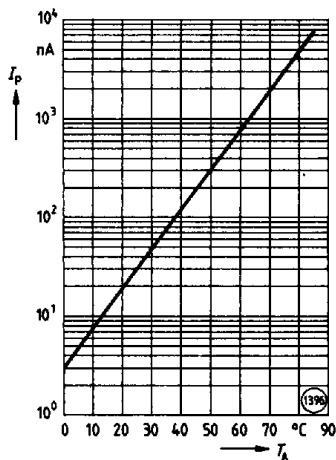
Photocurrent $I_p = f(E_v)$
open-circuit voltage $V_o = f(E_v)$



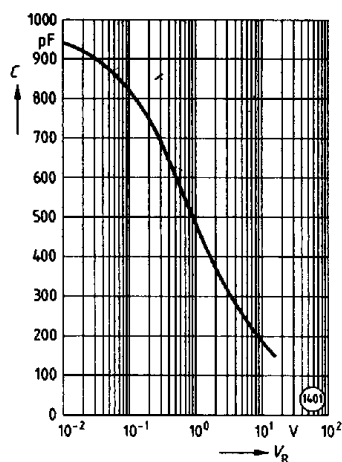
Dark current $I_R = f(V_R)$
($T_A = 25^\circ\text{C}$, $E = 0$)



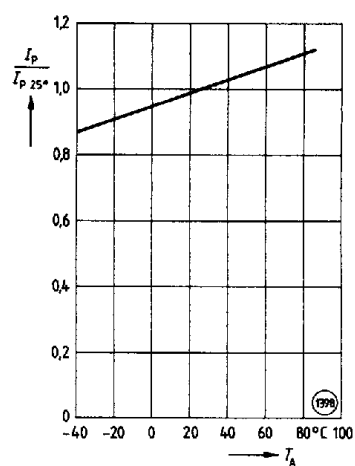
Dark current $I_R = f(T_A)$
($V_R = 10\text{ V}$, $E = 0$)



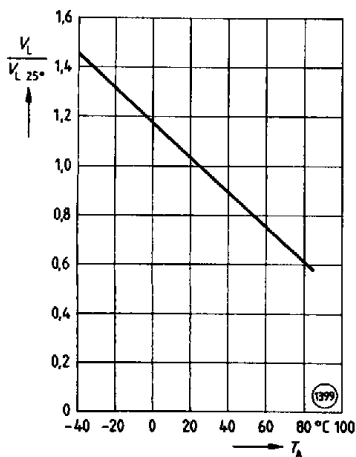
Capacitance $C = f(V_R)$
($f = 1\text{ MHz}$, $E = 0$)



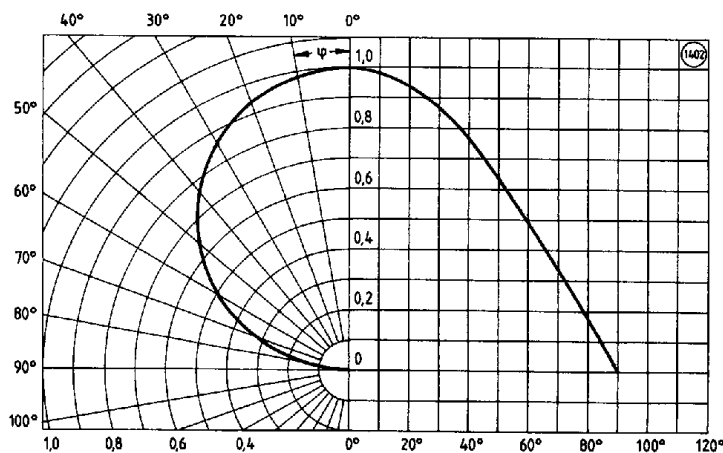
Relative photocurrent $I_p/I_{p25^\circ} = f(T_A)$
Standard light A



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



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



Photodiodes

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