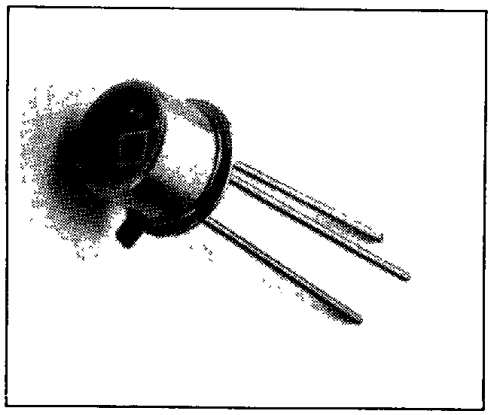
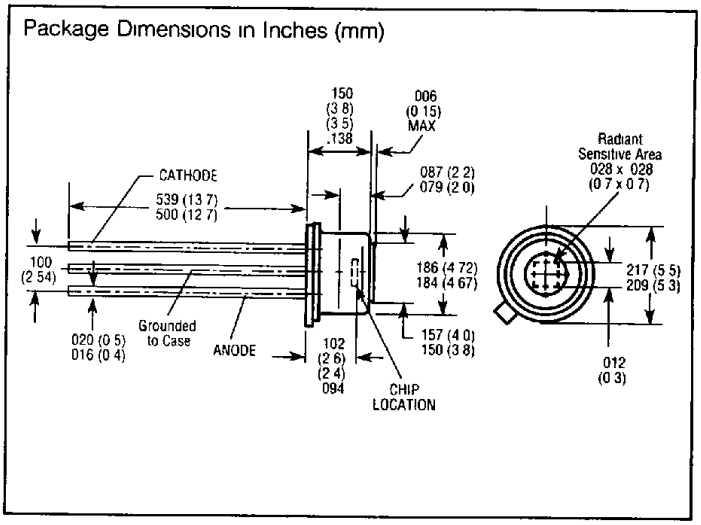
SIEMENS

T-41-50

SFH2012A

FIBER OPTIC PIN PHOTODIODE





FEATURES

- **TO-18 Hermetic Package, 3 Leads**
- **Isolated Case**
- **Flat Glass Lens**
- **For Fiber Optic Communications**

DESCRIPTION

SF2012A is a planar silicon PIN-photo diode The case (18A3 DIN 41876—similar to TO-18) has a flat glass lens top The cathode and anode are electrically isolated from the case The diode is a receiver with high operating frequency, very low reverse current, and fast switching time Because of the flat lens,the diode is especially suitable for use with fiber optic cables, up to 560 Mbits.

Maximum Ratings

Reverse Voltage (V_R)	50 V
Storage Temperature Range(T_S	-40 to +80°C
Junction Temperature (T_j)	80°C

Characteristics (T_{amb} = 25°C)

Wavelength of Max Photosensitivity	λ_{Smax}	850	nm
Radiant Sensitive Area	A	1	mm²
Dark Current (V_R = 20 V E = 0)	I_R	1 (≤5)	nA
Spectral Sensitivity (λ = 850 nm)	S_λ	0 55	A/W
(λ = 950 nm)	S_λ	0 45 (≥0 35)	A/W
Quantum Yield (Electrons per photon) (λ = 850 nm)	η	0 80	$\frac{\text{Electrons}}{\text{Photon}}$
Rise Time of the Photocurrent SFH202 (R_L = 50Ω V_R = 20 V, λ = 900 nm)	t_r	0 5 (≤1)	ns
SFH202a (R_L = 50Ω V_R = 50 V λ = 850 nm)	t_r	3	ns
Cut off Frequency (R_L = 50Ω V_R = 20)			
SFH2012 (λ = 900 nm)	f_g	500	MHz
SFH2012A (λ = 850 nm)	f_g	200	MHz
Capacitance			
(V_R = 0 V)	C_0	13	pF
(V_R = 1 V)	C_1	7	pF
(V_R = 12 V)	C_{12}	3 3	pF
(V_R = 20 V)	C_{20}	3	pF
Temperature Coefficient for I_P	TK	0 2	%/K
Noise Equivalent Power (V_R = 20 V)	NEP	3 3 × 10^{-14}	$\frac{\text{W}}{\sqrt{\text{Hz}}}$
Detection Limit	D*	3 1 × 10^{12}	$\frac{\text{cm}\sqrt{\text{Hz}}}{\text{W}}$

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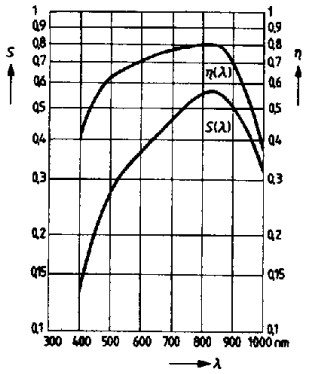
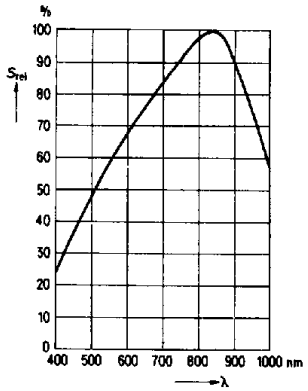
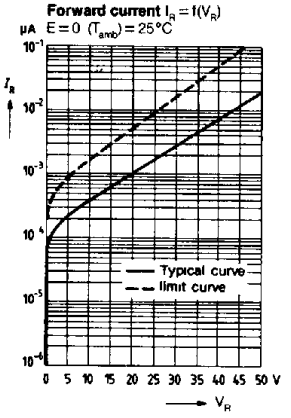
Spectral sensitivity $S = f(\lambda)$
and quantum yield $\eta = f(\lambda)$
in electrons per photon



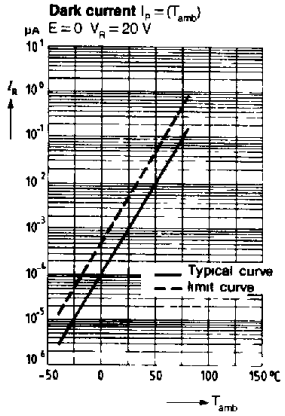
Relative spectral sensitivity
$S_{rel} = f(\lambda)$



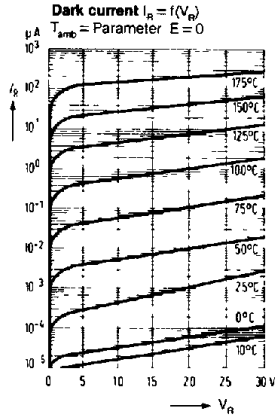
Forward current $I_R = f(V_R)$
E = 0 $(T_{amb}) = 25°C$



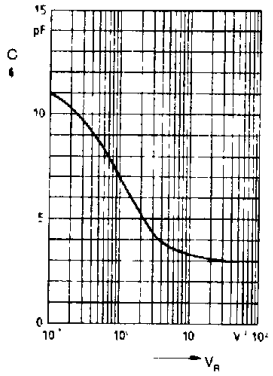
Dark current $I_R = (T_{amb})$
E = 0 $V_R = 20$ V



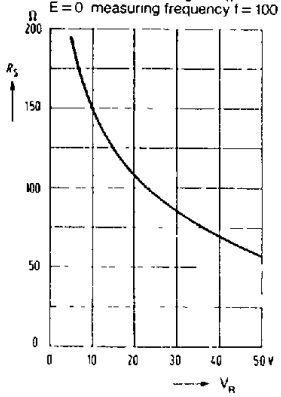
Dark current $I_R = f(V_R)$
T_{amb} = Parameter E = 0



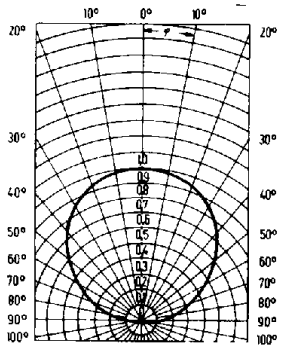
Junction capacitance $C = f(V_R)$
E = 0 measuring frequency f = 1 MHz



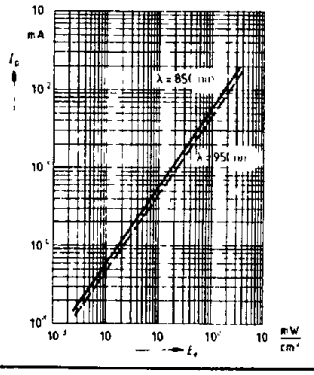
Series resistance $R_S = f(V_R)$
E = 0 measuring frequency f = 100 MHz



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



Photocurrent $I_P = f(E_v)$



Fiber Optic Devices

SFH2012A