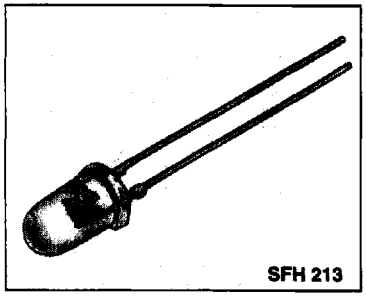
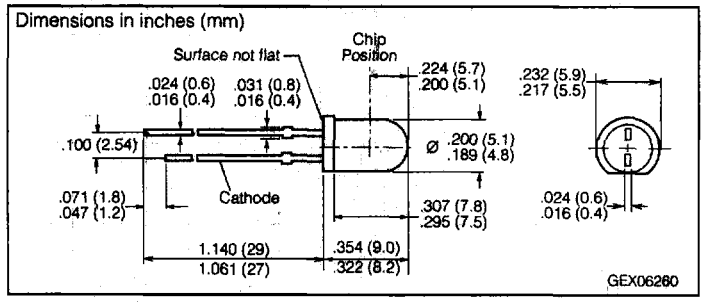
SIEMENS

SFH 213
DAYLIGHT FILTER SFH 213FA
Very Short Switching Time Silicon NPN Photodiode



Dimensions in inches (mm)



FEATURES

- **Especially suitable for applications**
  - **SFH 213: 400 nm to 1100 nm**
  - **SFH213FA: 880nm**
- **Short switching time (typ. 5 ns)**
- **T1¾ (5 mm) LED plastic package**
- **Also available on tape**

APPLICATIONS

- **Industrial electronics**
- **For control and drive circuits**
- **Photointerrupters**
- ***Fiber optic transmission systems***

Maximum Ratings

Operating/Storage Temperature Range (T_{OP}, T_{STG}) ..... −55° to +100°C
Soldering Temperature 2 mm from case bottom (T_S) t ≤3 s ..... 300°C
Reverse Voltage (V_R) ..... 50 V
Total Power Dissipation (P_{TOT}) ..... 100 mW

Characteristics T_A=25°C

Parameter	Sym.	213	213FA	Unit	Condition
Spectral Sensitivity	S	135 (≥100)		nA/x	V_R=5 V, Std. Light A, T=2856 K
			90(≥65)	µA	V_R=5 V, λ=870 nm, E_e=1 mW/cm²
Wavelength, Max. Sensitivity	λ_{Smax}	850	900	nm	
Spectral Sensitivity Range	λ	400–1100	750–1100		S=10% of S_{MAX}
Radiant Sensitive Area	A	1		mm²	
Radiant Sensitive Area Dimensions	L x W	1 x 1		mm	
Distance, Chip Surface to Case Surface	H	5.1–5.7			
Half Angle	φ	±10		Deg.	
Dark Current	I_R	1 (≤5)		nA	V_R=20 V
Spectral Sensitivity	S_λ	0.62	0.59	A/W	λ=850 nm
Quantum Yield	η	0.89	0.86	electrons/photon	
Open Circuit Voltage	V_o	430 (≥ 350)		mV	E_V=1000 lx, Std. Light A, T=2856 K
			380 (≥ 300)		E_e=0.5 mW/cm², λ=870 nm
Short Circuit Current	I_{SC}	125		µA	E_V=1000 lx, Std. Light A, T= 2856 K
			42		E_e=0.5 mW/cm², λ=870 nm
Rise and Fall Time, Photocurrent	t_R, t_F	5		ns	R_L=50 Ω, V_R=20 V, λ=850 nm, I_p=800 µA
Forward Voltage	V_F	1.3		V	I_F=80 mA, E=0
Capacitance	C_O	11		P_F	V_R =0 V, f=1 MHz, E=0
Temp. Coefficient, V_O	TC_V	−2.6		mV/K	
Temp. Coefficient, I_{SC}	TC_I	0.18		%/K	Std. Light A λ=870 nm
			0.2		
Noise Equivalent Power	NEP	2.9×10^{-14}		W/√Hz	V_R =10 V, λ=850 nm
Detection Limit	D*	3.5×10^{12}		cm.√Hz/W	

Figure 1. Directional characteristics $S_{rel}=f(\varphi)$

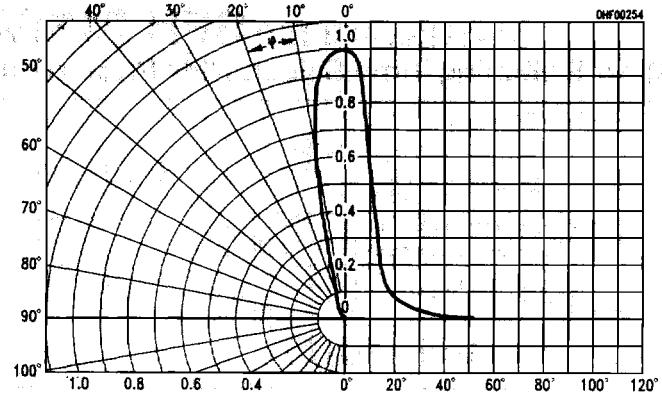


Figure 6. Total power dissipation $P_{TOT}=f(T_A)$

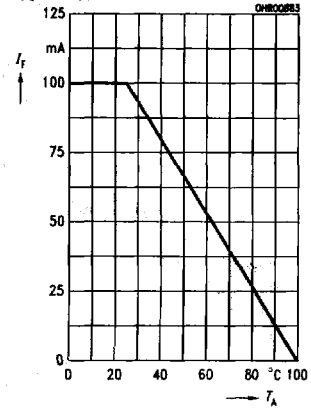


Figure 2. Relative spectral sensitivity, $S_{rel}=f(\lambda)$ SFH213

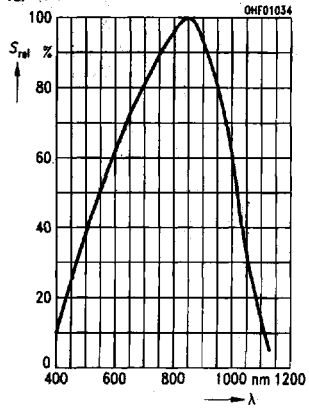


Figure 4. Photocurrent $I_P=f(E_V)$, $V_R=5$ V Open-circuit voltage $V_O=f(E_V)$, SFH 213

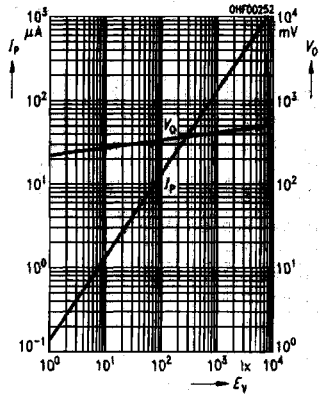


Figure 7. Dark current $I_R=f(V_R)$, E=0

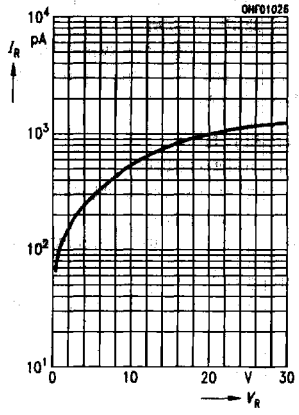


Figure 3. Relative spectral sensitivity, $S_{rel}=f(\lambda)$ SFH213FA

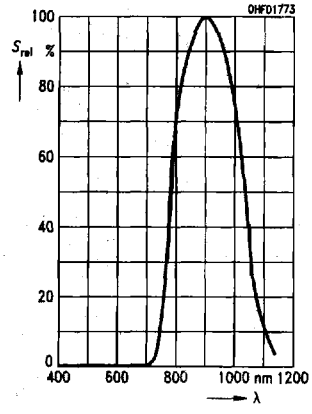


Figure 5. Photocurrent $I_P=f(E_e)$, $V_R=5$ V, Open-circuit voltage $V_O=f(E_e)$, SFH213FA