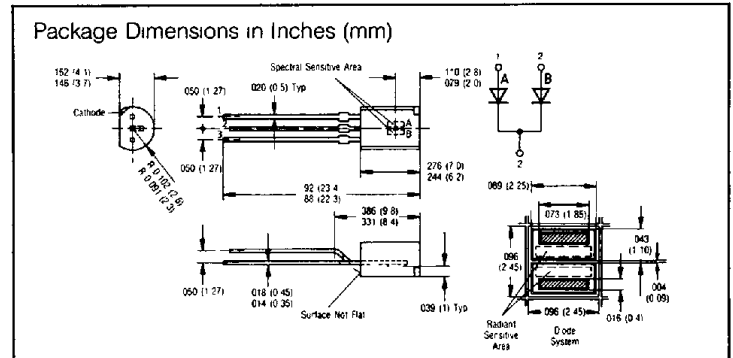
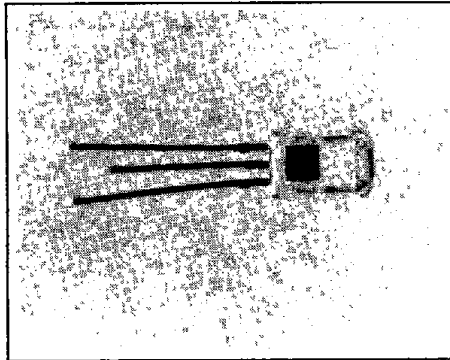


SIEMENS

T-41-51
SFH 248

WITH DAYLIGHT FILTER SFH 248F

SILICON DIFFERENTIAL PHOTODIODE



FEATURES

- High Reliability
- Low Noise
- High Open-Circuit Voltage as Photovoltaic Cells
- Detector For Low Illuminance
- Short Switching Time
- Low Capacitance
- High Spectral Sensitivity
- Cathode Marking: Middle Solder Tab
- Suitable for Use in the Visible Light and Near Infrared Range
- Daylight Filter Option, SFH248F

DESCRIPTION

SFH248 and SFH248F are silicon differential photodiodes fabricated in planar technology. The devices are packaged in a plastic case similar to a TO92. The terminals are solder tabs with 0.1" (2.54 mm) lead spacing. These photodetectors can be used as photodiodes with reverse voltage or as photovoltaic cells. Applications include edge control, path and corner scanning, industrial electronics, measuring and controlling devices.

Maximum Ratings

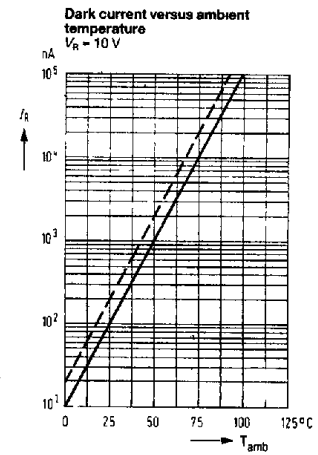
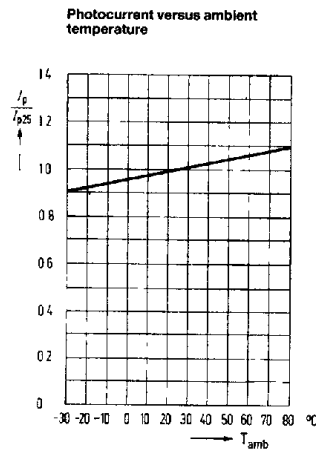
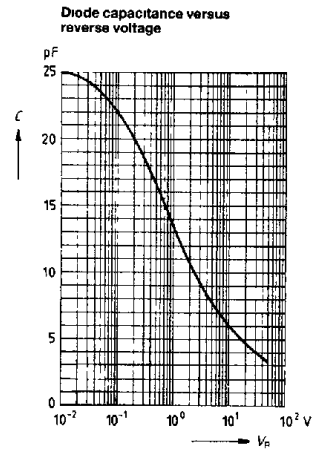
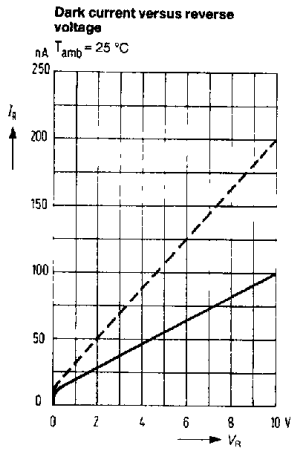
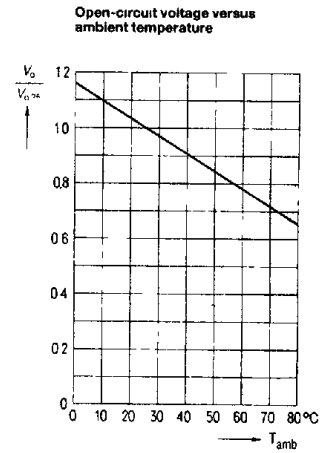
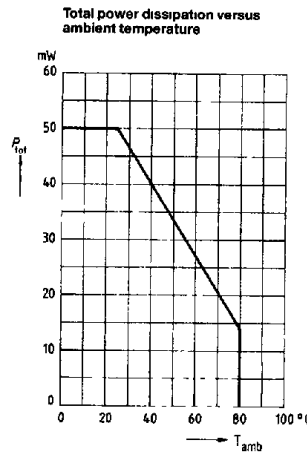
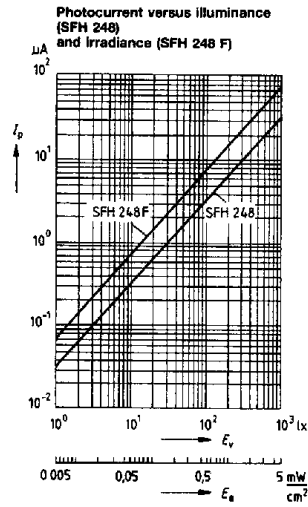
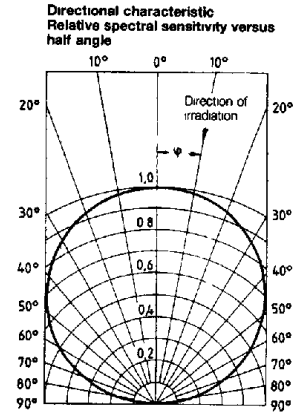
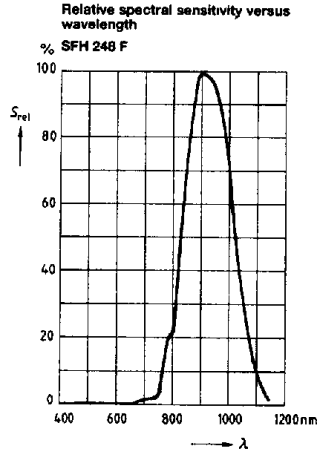
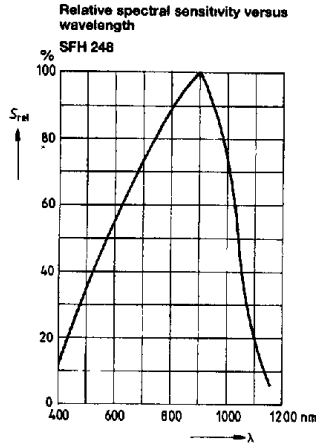
Reverse Voltage (V_R)	10 V
Storage and Operating Temperature	-40 to +80°C
Soldering Temperature in a 2 mm Distance from the Case Bottom ($t \leq 3$ s) (t_S)	230°C
Power Dissipation (P_{tot})	50 mW

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

	Symbol	SFH248	SFH248F	Unit
Spectral Sensitivity ($V_R = 5$ V Note 1)	S	24 (≥ 15)		nA/lx
Spectral Sensitivity ($V_R = 5$ V, $\lambda = 950$ nm, $E_e = 0.5$ mW/cm ²)	S		7.5 (≥ 4)	μA
Wavelength of Max Sensitivity	λ_{Smax}	850	950	nm
Spectral Range of Photosensitivity ($S = 10\%$ of S_{max})	λ	430 to 1150	800 to 1150	nm
Radiant Sensitive Area	A	154	154	mm ²
Dimensions of the Radiant Sensitive Area	L x W	0.7 x 2.2	0.7 x 2.2	mm
Distance Between Chip Surface and Package Surface	D	1	1	mm
Half Angle	φ	± 60	± 60	Deg
Dark Current ($V_R = 10$ V)	I_R	100 (≤ 200)	100 (≤ 200)	nA
Spectral Sensitivity ($\lambda = 850$ nm)	S_λ	0.55	0.55	A/W
Quantum Yield ($\lambda = 850$ nm)	η	0.80	0.80	Electrons/Photon
Open Circuit Voltage ($E_e = 1000$ lx Note 1)	V_O	390 (≥ 320)		mV
($E_e = 0.5$ mW/cm ² , $\lambda = 950$ nm)	V_O		340 (≥ 280)	mV
Short Circuit Current ($E_e = 1000$ lx Note 1)	I_K	24 (≥ 15)		μA
($E_e = 0.5$ mW/cm ² , $\lambda = 950$ nm)	I_K		7.5 (≥ 4)	μA
Rise and Fall Time of the Photocurrent from 10% to 90% and from 90% to 10% of the Final Value ($R_L = 1 \Omega$, $V_R = 0$ V, $\lambda = 830$ nm, $I_p = 20 \mu\text{A}$)	t_r, t_f	500	500	ns
Forward Voltage ($I_F = 100$ mA, $E_e = 0$, $T_{amb} = 25^\circ\text{C}$)	V_F	1.3	1.3	V
Capacitance ($V_R = 0$ V, $f = 1$ MHz, $E_e = 0$ lx)	C_0	40	40	pF
($V_R = 10$ V, $f = 1$ MHz, $E_e = 0$ lx)	C_{10}	10	10	pF
Temperature Coefficient V_O	TC_V	-2.6	-2.6	mV/K
Temperature Coefficient I_S	TC_I	0.18	0.18	%/K

*The illuminance indicated refers to unfiltered radiation of a tungsten filament lamp at a color temperature of 2856 K (Standard light A in accordance with DIN 5033 and IEC publ. 306 1)

T-41-51



Photodiodes