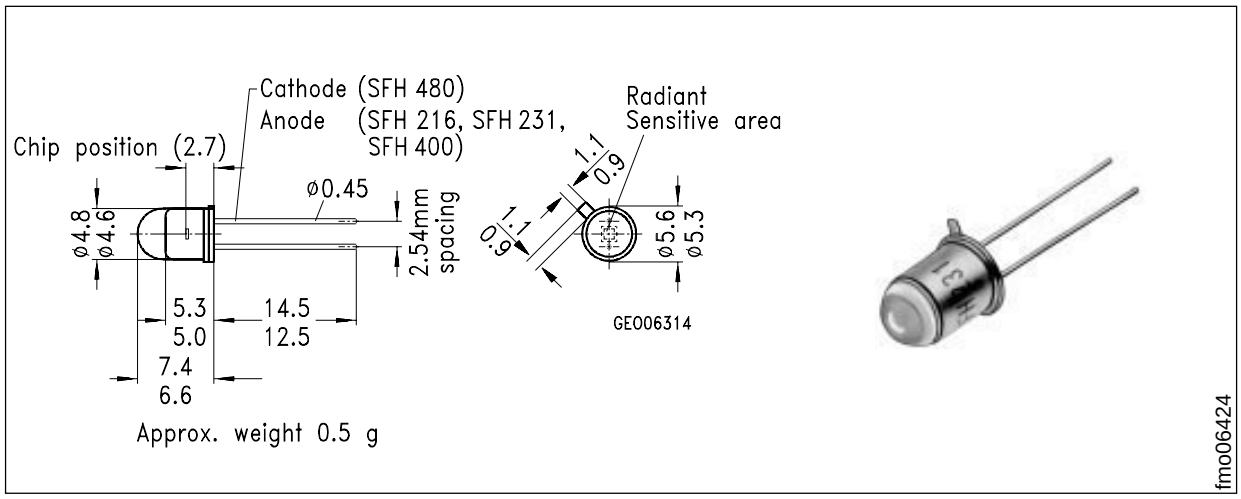
SIEMENS

Germanium-PIN-Fotodiode
Germanium PIN Photodiode

SFH 231



Maße in mm, wenn nicht anders angegeben/Dimensions in mm, unless otherwise specified.

Wesentliche Merkmale

- Speziell geeignet für Anwendungen im Bereich von 600 nm bis 1800 nm
- Kurze Schaltzeit (typ. 9 ns)
- Hermetisch dichte Metallbauform (ähnlich TO-18)

Anwendungen

- Meß-, Steuer- und Regelzwecke
- Spektralphotometer
- IR-Laserdetektorsysteme
- IR-Entfernungsmeßeinrichtungen
- Optische Nachrichtenübertragung und Meßgeräte

Features

- Especially suitable for applications from 600 nm to 1800 nm
- Short switching time (typ. 9 ns)
- Hermetically sealed metal package (similiar to TO-18)

Applications

- For control and drive circuits
- Spectrophotometers
- IR laser detector systems
- IR distance measuring equipment
- Optical information transmission and measuring instruments

Typ **Type**	**Bestellnummer** **Ordering Code**
SFH 231	Q62702-P1052

Grenzwerte
Maximum Ratings

Bezeichnung **Description**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Betriebs- und Lagertemperatur Operating and storage temperature range	T_{op}; T_{stg}	– 40 ... + 80	°C
Sperrspannung Reverse voltage	V_R	15	V
Verlustleistung, T_A = 25 °C Total power dissipation	P_{tot}	150	mW
Wärmewiderstand Thermal resistance	R_{thJA}	450	K/W

Kennwerte (T_A = 25 °C, λ = 1300 nm)
Characteristics

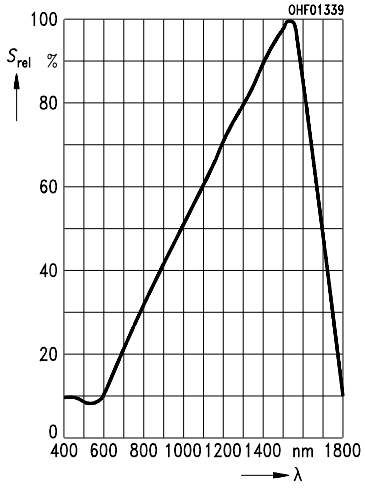
Bezeichnung **Description**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Fotoempfindlichkeit Spectral sensitivity Normlicht/standard light A, T= 2856 K V_R = 0 V	S_v	130	nA/lx
Fotoempfindlichkeit Spectral sensitivity V_R = 0 V, E_e = 0.25 mW/cm^2	S_e	13 (≥ 8)	µA
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\ max}$	1550	nm
Spektraler Bereich der Fotoempfindlichkeit S = 10 % von S_{max} Spectral range of sensitivity S = 10 % of S_{max}	λ	600 ... 1800	nm
Bestrahlungsempfindliche Fläche Radiant sensitive area	A	1	mm^2
Abmessung der bestrahlungsempfindlichen Fläche Dimensions of radiant sensitive area	$L \times B$ $L \times W$	1 × 1	mm
Abstand Chipoberfläche zu Gehäuseoberfläche Distance chip front to case surface	H	4.2 ... 5	mm

Kennwerte (T_A = 25 °C, λ = 1300 nm)
Characteristics

Bezeichnung **Description**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Halbwinkel Half angle	φ	± 10	Grad deg.
Dunkelstrom, V_R = 1 V, E = 0 Dark current	I_R	10 (≤ 50)	µA
Spektrale Fotoempfindlichkeit, Spectral sensitivity	S_λ	0.68	A/W
Quantenausbeute Quantum yield	η	0.65	Electrons Photon
Kurzschlußstrom, E_e = 0.25 mW/cm^2 Short-circuit current	I_{SC}	13 (≥ 8)	µA
Anstiegs- und Abfallzeit des Fotostromes Rise and fall time of the photocurrent R_L = 50 Ω; V_R = 1 V; I_p = 100 µA	t_r, t_f	9	ns
Durchlaßspannung, I_F = 100 mA, E = 0 Forward voltage	V_F	1	V
Kapazität, V_R = 1 V, f = 1 MHz, E = 0 Capacitance	C_1	62	pF
Rauschäquivalente Strahlungsleistung Noise equivalent power V_R = 1 V	NEP	2.6×10^{-12}	$\frac{W}{\sqrt{Hz}}$
Nachweisgrenze, V_R = 1 V Detection limit	D*	3.8×10^{10}	$\frac{cm \cdot \sqrt{Hz}}{W}$

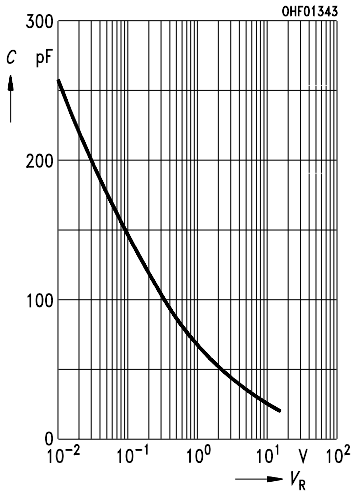
Relative spectral sensitivity

$S_{rel} = f\ (\lambda)$



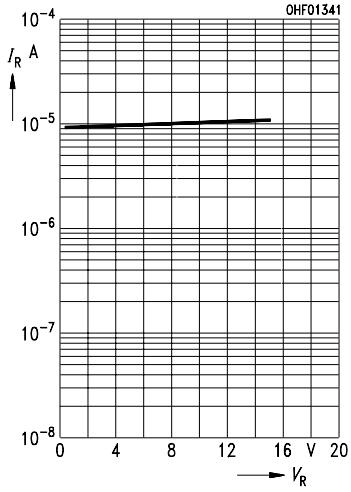
Capacitance

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



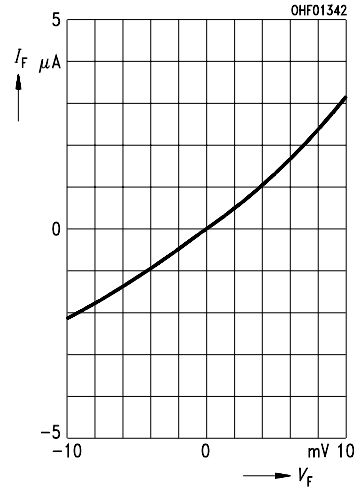
Dark current

$I_R = f\ (V_R)$, E = 0



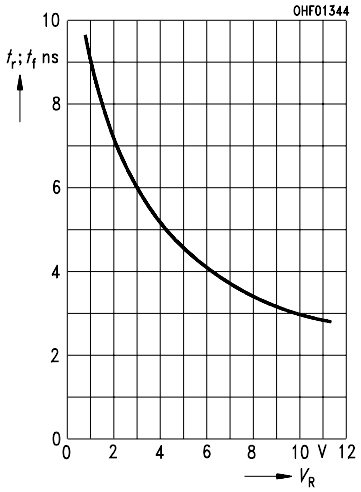
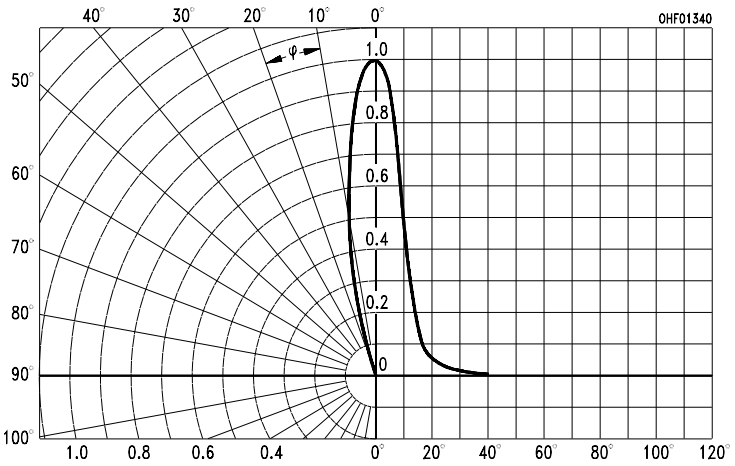
Zero crossover

$I_F = f\ (V_F)$, E = 0



Switching times

$t_r/t_f = f\ (V_R)$, R_L = 50 Ω



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