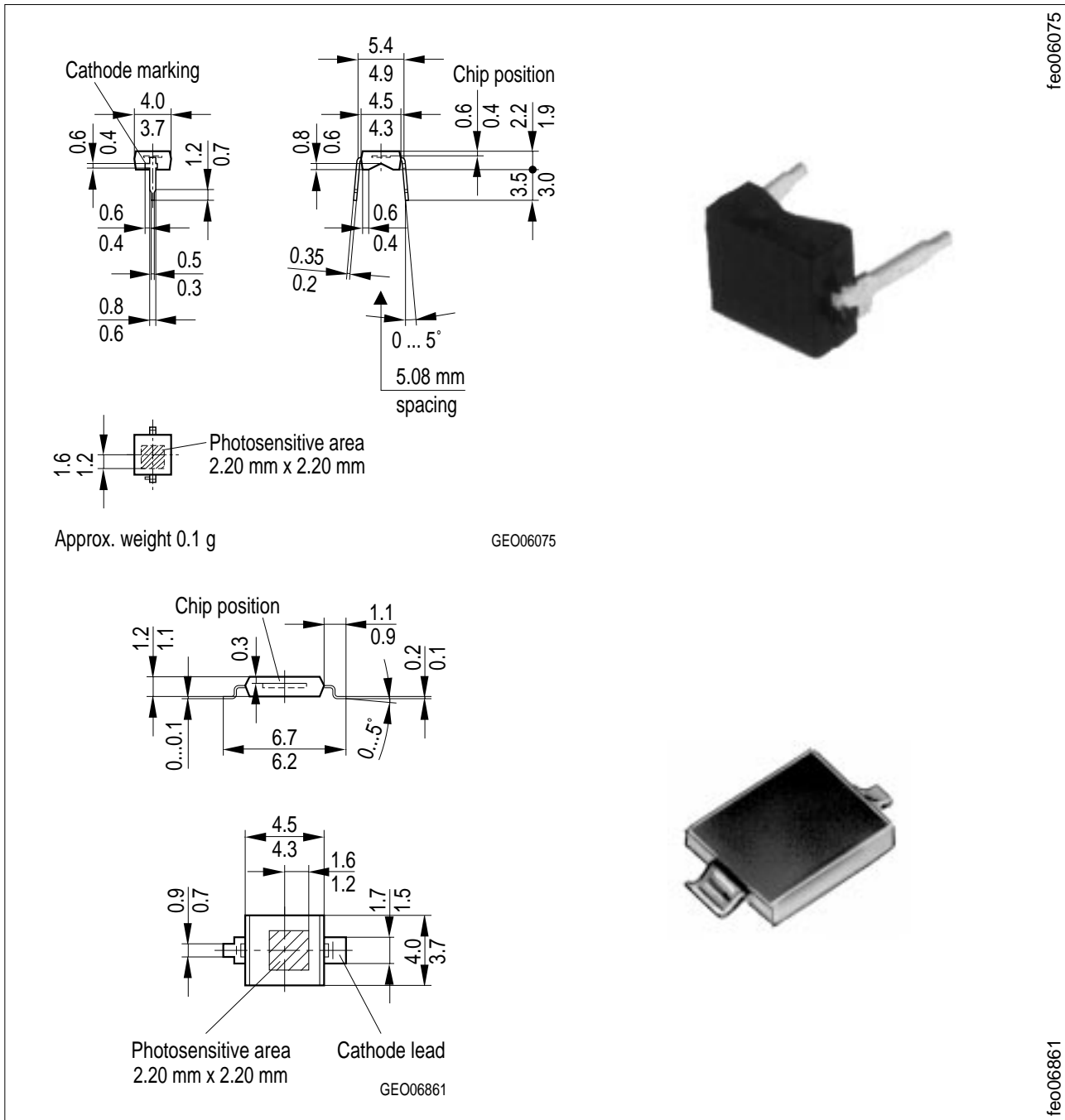


Silizium-PIN-Fotodiode mit Tageslichtsperrfilter
NEU: in SMT
Silicon PIN Photodiode with Daylight Filter
NEW: in SMT

BP 104 F
BP 104 FS



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

Wesentliche Merkmale

- Speziell geeignet für Anwendungen bei 950 nm
- kurze Schaltzeit (typ. 20 ns)
- DIL-Plastikbauform mit hoher Packungsdichte
- BP 104 FS: geeignet für Vapor-Phase Lötten und IR-Reflow Lötten

Anwendungen

- IR-Fernsteuerung von Fernseh- und Rundfunkgeräten, Videorecordern, Lichtdimmern, Gerätefernsteuerungen
- Lichtschranken für Gleich- und Wechsellichtbetrieb

Features

- Especially suitable for applications of 950 nm
- Short switching time (typ. 20 ns)
- DIL plastic package with high packing density
- BP 104 FS: suitable for vapor-phase and IR-reflow soldering

Applications

- IR remote control of hi-fi and TV sets, video tape recorders, dimmers, remote controls of various equipment
- Photointerrupters

Typ (*vorher) Type (*formerly)	Bestellnummer Ordering Code
BP 104 F (*BP 104)	Q62702-P84
BP 104 FS	Q62702-P1646

Grenzwerte Maximum Ratings

Bezeichnung Description	Symbol Symbol	Wert Value	Einheit Unit
Betriebs- und Lagertemperatur Operating and storage temperature range	$T_{op}; T_{stg}$	- 40 ... + 85	°C
Sperrspannung Reverse voltage	V_R	20	V
Verlustleistung, $T_A = 25\text{ °C}$	P_{tot}	150	mW

Kennwerte ($T_A = 25 \text{ °C}$, $\lambda = 950 \text{ nm}$)

Characteristics

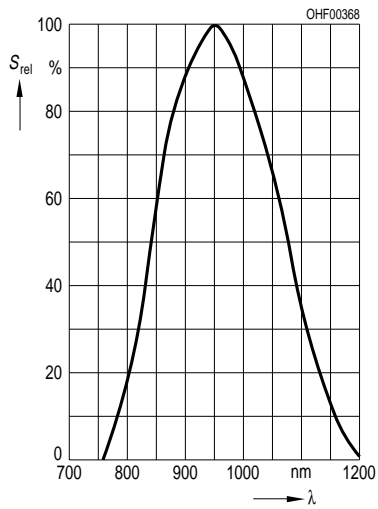
Bezeichnung Description	Symbol Symbol	Wert Value	Einheit Unit
Fotoempfindlichkeit Spectral sensitivity $V_R = 5 \text{ V}$, $E_e = 1 \text{ mW/cm}^2$	S	34 (≥ 25)	μA
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S \text{ max}}$	950	nm
Spektraler Bereich der Fotoempfindlichkeit $S = 10 \text{ \%}$ von S_{max} Spectral range of sensitivity $S = 10 \text{ \%}$ of S_{max}	λ	780 ... 1100	nm
Bestrahlungsempfindliche Fläche Radiant sensitive area	A	4.84	mm^2
Abmessung der bestrahlungsempfindlichen Fläche Dimensions of radiant sensitive area	$L \times B$ $L \times W$	2.20×2.20	$\text{mm} \times \text{mm}$
Abstand Chipoberfläche zu Gehäuseoberfläche Distance chip front to case surface	H	0.5 0.3 (BP 104 FS)	mm
Halbwinkel Half angle	φ	± 60	Grad deg.
Dunkelstrom, $V_R = 10 \text{ V}$ Dark current	I_R	2 (≤ 30)	nA
Spektrale Fotoempfindlichkeit Spectral sensitivity	S_λ	0.70	A/W
Quantenausbeute Quantum yield	η	0.90	<u>Electrons</u> Photon
Leerlaufspannung, $E_e = 0.5 \text{ mW/cm}^2$ Open-circuit voltage	V_O	330 (≥ 250)	mV
Kurzschlußstrom, $E_e = 0.5 \text{ mW/cm}^2$ Short-circuit current	I_{SC}	17	μA
Anstiegs- und Abfallzeit des Fotostromes Rise and fall time of the photocurrent $R_L = 50 \text{ }\Omega$; $V_R = 5 \text{ V}$; $\lambda = 850 \text{ nm}$; $I_p = 800 \text{ }\mu\text{A}$	t_r, t_f	20	ns
Durchlaßspannung, $I_F = 100 \text{ mA}$, $E = 0$ Forward voltage	V_F	1.3	V
Kapazität, $V_R = 0 \text{ V}$, $f = 1 \text{ MHz}$, $E = 0$ Capacitance	C_0	48	pF

Kennwerte ($T_A = 25\text{ °C}$, $\lambda = 950\text{ nm}$)
Characteristics (cont'd)

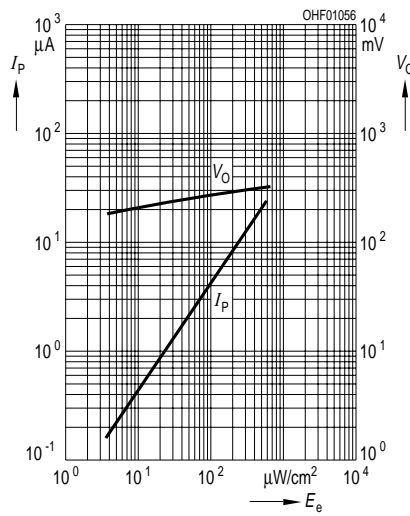
Bezeichnung Description	Symbol Symbol	Wert Value	Einheit Unit
Temperaturkoeffizient von V_O Temperature coefficient of V_O	TC_V	- 2.6	mV/K
Temperaturkoeffizient von I_{SC} Temperature coefficient of I_{SC}	TC_I	0.18	%/K
Rauschäquivalente Strahlungsleistung Noise equivalent power $V_R = 10\text{ V}$	NEP	3.6×10^{-14}	$\frac{W}{\sqrt{Hz}}$
Nachweisgrenze, $V_R = 10\text{ V}$ Detection limit	D^*	6.1×10^{12}	$\frac{cm \cdot \sqrt{Hz}}{W}$

Relative spectral sensitivity

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

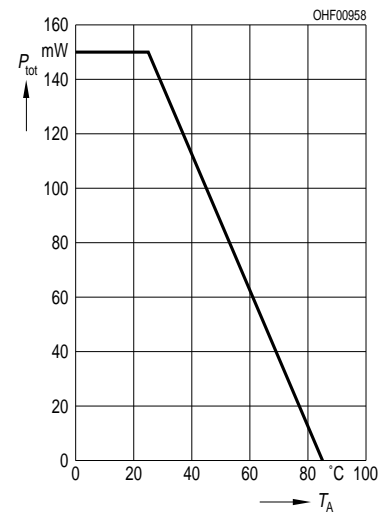


Photocurrent $I_P = f(E_e), V_R = 5\text{ V}$ Open-circuit voltage $V_O = f(E_e)$



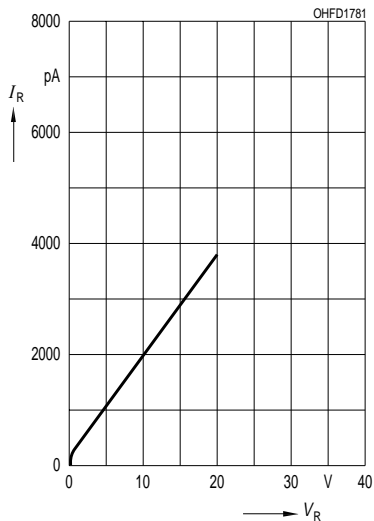
Total power dissipation

$$P_{tot} = f(T_A)$$



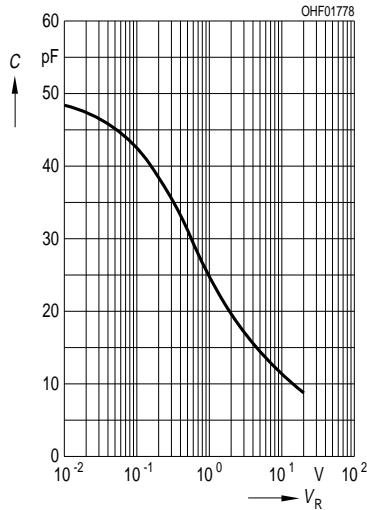
Dark current

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



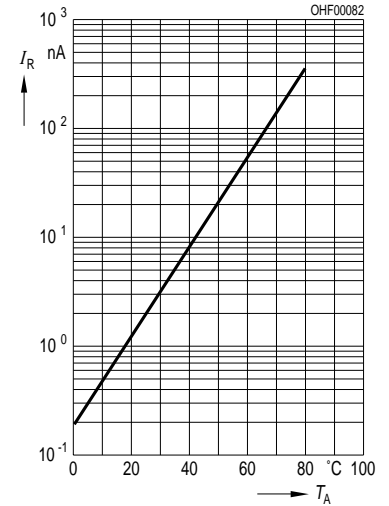
Capacitance

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

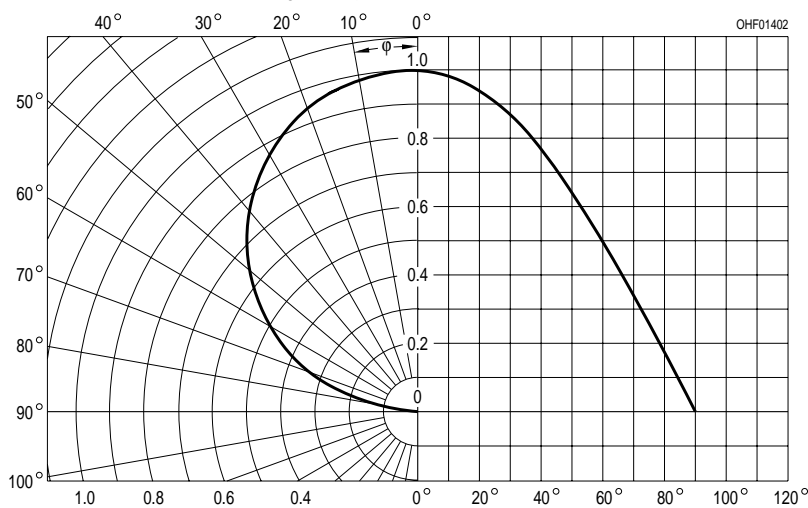


Dark current

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



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





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