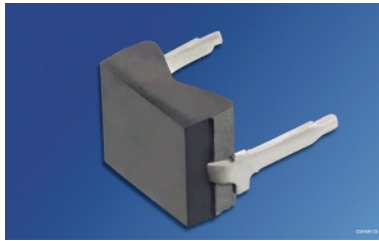


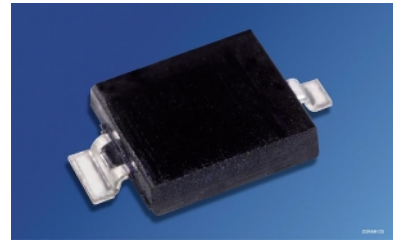
Silizium-Pin-Fotodiode mit Tageslichtsperrfilter; in SMT

Silicon Pin Photodiode with Daylight Filter; in SMT

BP 104 F
BP 104 FS



BP 104 F



BP 104 FS

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 Löten und IR-Reflow Löten

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 Type	Bestellnummer Ordering Code	Gehäuse Package
BP 104 F	Q62702-P84	DIL-Gehäuse, schwarzes Epoxy-Gießharz, Kathodenkennzeichnung: Fähnchen am Anschluß DIL package, black epoxy resin Cathode marking: flag on lead
BP 104 FS	Q62702-P1646	DIL/SMT-Gehäuse, schwarzes Epoxy-Gießharz, Kathodenkennzeichnung: Langer, breiter Anschluß DIL/SMT package, black epoxy resin Cathode marking: long broad lead

Grenzwerte
Maximum Ratings

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Betriebs- und Lagertemperatur Operating and storage temperature range	$T_{op}; T_{stg}$	- 40 ... + 100	°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

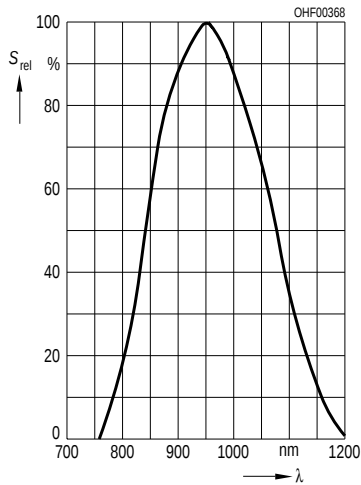
Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Fotostrom Photocurrent $V_R = 5\text{ V}$, $E_e = 1\text{ mW/cm}^2$	I_P	34 (≥ 25)	μA
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\text{ max}}$	950	nm
Spektraler Bereich der Fotoempfindlichkeit $S = 10\%$ von S_{max} Spectral range of sensitivity $S = 10\%$ of S_{max}	λ	800 ... 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

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

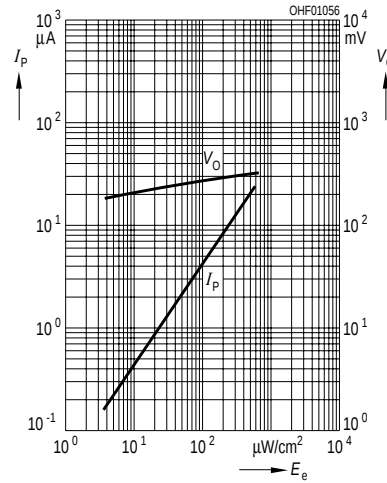
Characteristics (cont'd)

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
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 $R_L = 50\ \Omega$; $V_R = 5\text{ V}$; $\lambda = 850\text{ nm}$; $I_p = 800\ \mu\text{A}$	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
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}	$\frac{\text{W}}{\sqrt{\text{Hz}}}$
Nachweisgrenze, $V_R = 10\text{ V}$ Detection limit	D^*	6.1×10^{12}	$\frac{\text{cm} \times \sqrt{\text{Hz}}}{\text{W}}$

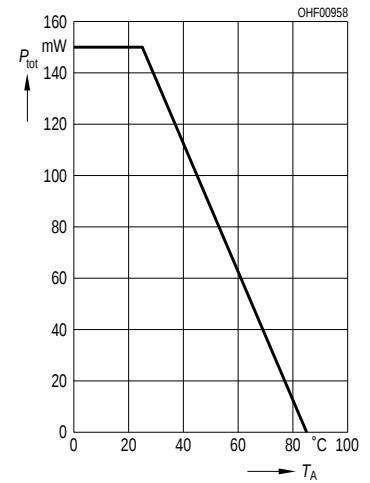
Relative Spectral Sensitivity
 $S_{\text{rel}} = f(\lambda)$



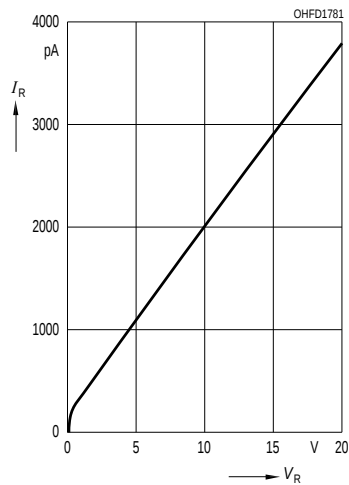
Photocurrent $I_P = f(E_e)$, $V_R = 5 \text{ V}$
Open-Circuit Voltage $V_O = f(E_e)$



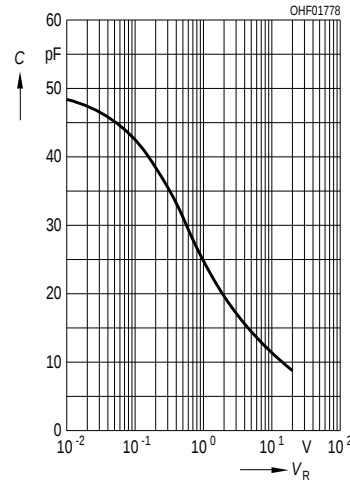
Total Power Dissipation
 $P_{\text{tot}} = f(T_A)$



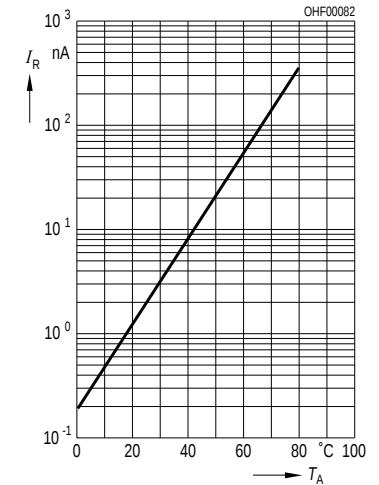
Dark Current
 $I_R = f(V_R), E = 0$



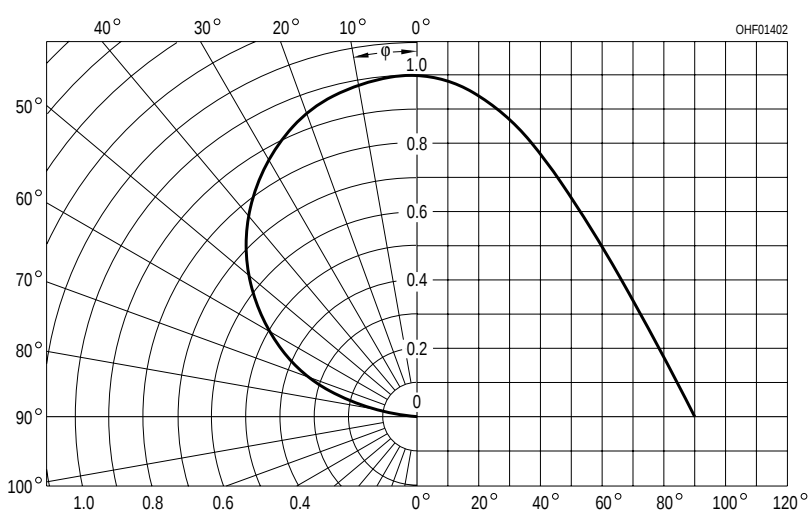
Capacitance
 $C = f(V_R), f = 1 \text{ MHz}, E = 0$



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

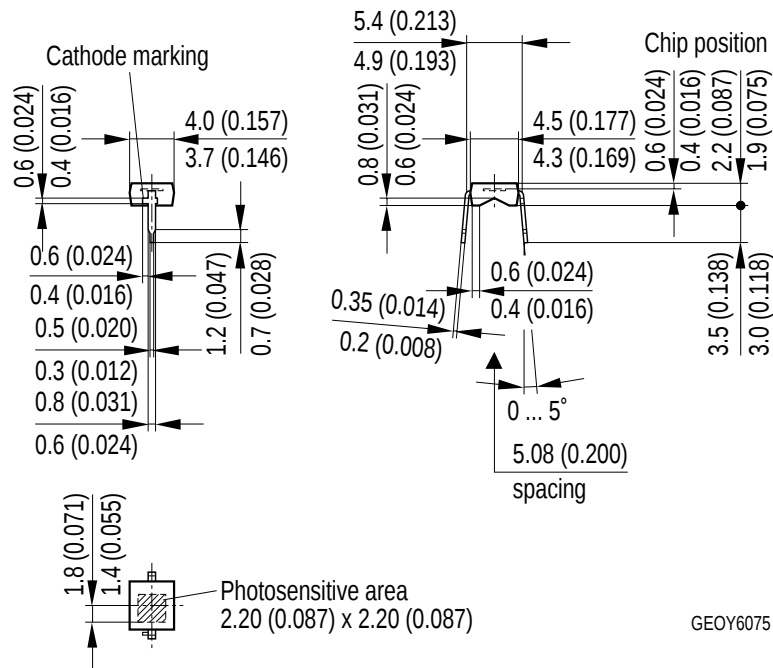


Directional Characteristics
 $S_{\text{rel}} = f(\varphi)$

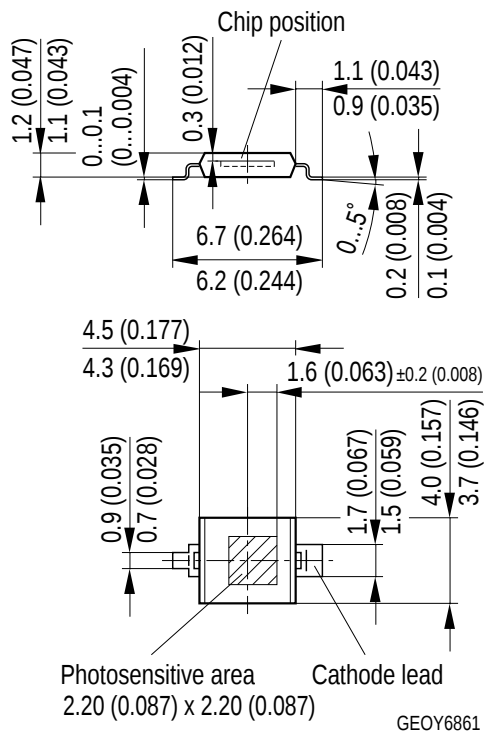


Maßzeichnung Package Outlines

BP 104 F



BP 104 FS



Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

Published by OSRAM Opto Semiconductors GmbH & Co. OHG
Wernerwerkstrasse 2, D-93049 Regensburg

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Attention please!

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Packing

Please use the recycling operators known to you. We can also help you – get in touch with your nearest sales office. By agreement we will take packing material back, if it is sorted. You must bear the costs of transport. For packing material that is returned to us unsorted or which we are not obliged to accept, we shall have to invoice you for any costs incurred.

Components used in life-support devices or systems must be expressly authorized for such purpose! Critical components ¹, may only be used in life-support devices or systems ² with the express written approval of OSRAM OS.

¹ A critical component is a component used in a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or effectiveness of that device or system.

² Life support devices or systems are intended (a) to be implanted in the human body, or (b) to support and/or maintain and sustain human life. If they fail, it is reasonable to assume that the health of the user may be endangered.