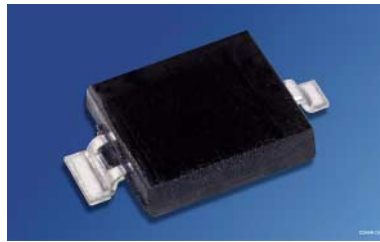
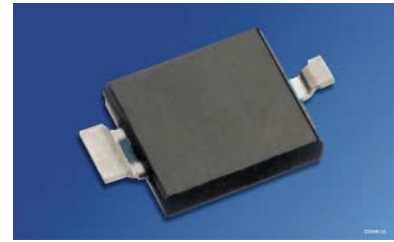


**Silizium-Pin-Fotodiode mit Tageslichtsperrfilter**  
**Silicon Pin Photodiode with Daylight Filter**  
**Lead (Pb) Free Product - RoHS Compliant**

**BP 104 FAS**  
**BP 104 FASR**



BP 104 FAS



BP 104 FASR

**Wesentliche Merkmale**

- Speziell geeignet für Anwendungen im Bereich von 730 nm... 1100nm
- Kurze Schaltzeit (typ. 20 ns)
- SMT-fähig

**Anwendungen**

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

**Features**

- Especially suitable for applications from 730 nm... 1100nm
- Short switching time (typ. 20 ns)
- Suitable for SMT

**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	Fotostrom, $E_e=1 \text{ mW/cm}^2$ , $V_R = 5 \text{ V}$ , $\lambda = 880 \text{ nm}$ Photocurrent $I_p (\mu\text{A})$
BP 104 FAS	Q65110A2672	34 ( $\geq 25$ )
BP 104 FASR	Q65110A4263	34 ( $\geq 25$ )

**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, $T_A = 25$ °C Total power dissipation	$P_{tot}$	150	mW

**Kennwerte ( $T_A = 25$  °C,  $\lambda = 880$  nm)**
**Characteristics**

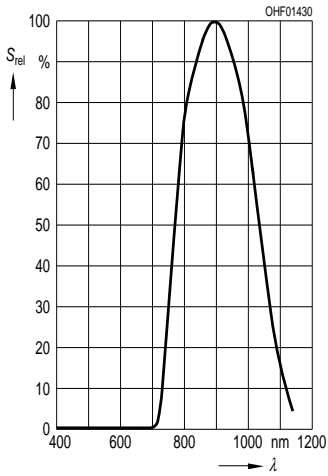
Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Fotostrom Photocurrent $V_R = 5$ V, $E_e = 1$ mW/cm <sup>2</sup>	$I_P$	34 ( $\geq 25$ )	$\mu$ A
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\ max}$	880	nm
Spektraler Bereich der Fotoempfindlichkeit $S = 10$ % von $S_{max}$ Spectral range of sensitivity $S = 10$ % of $S_{max}$	$\lambda$	730 ... 1100	nm
Bestrahlungsempfindliche Fläche Radiant sensitive area	$A$	4.84	mm <sup>2</sup>
Halbwinkel Half angle	$\varphi$	$\pm 60$	Grad deg.
Dunkelstrom, $V_R = 10$ V Dark current	$I_R$	2 ( $\leq 30$ )	nA
Spektrale Fotoempfindlichkeit Spectral sensitivity	$S_\lambda$	0.65	A/W
Quantenausbeute Quantum yield	$\eta$	0.90	<u>Electrons</u> Photon
Leerlaufspannung, $E_e = 0.5$ mW/cm <sup>2</sup> Open-circuit voltage	$V_O$	330 ( $\geq 250$ )	mV
Kurzschlussstrom, $E_e = 0.5$ mW/cm <sup>2</sup> Short-circuit current	$I_{SC}$	16	$\mu$ A

Kennwerte ( $T_A = 25\text{ °C}$ ,  $\lambda = 880\text{ nm}$ )

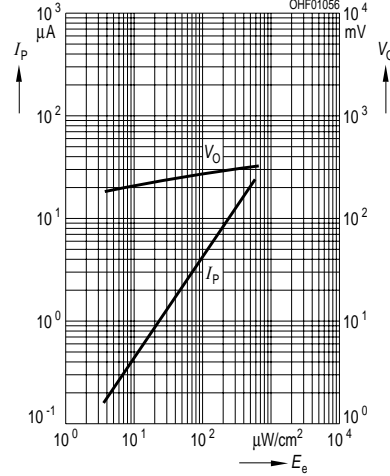
Characteristics (cont'd)

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
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 $V_R = 10\text{ V}$	$NEP$	$3.6 \times 10^{-14}$	$\frac{W}{\sqrt{\text{Hz}}}$
Nachweisgrenze, $V_R = 10\text{ V}$ Detection limit	$D^*$	$6.1 \times 10^{12}$	$\frac{\text{cm} \times \sqrt{\text{Hz}}}{W}$

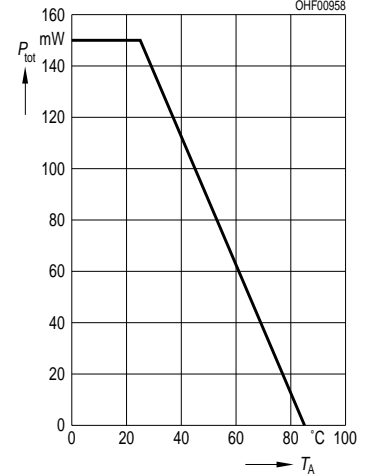
**Relative Spectral Sensitivity**  
 $S_{rel} = f(\lambda)$



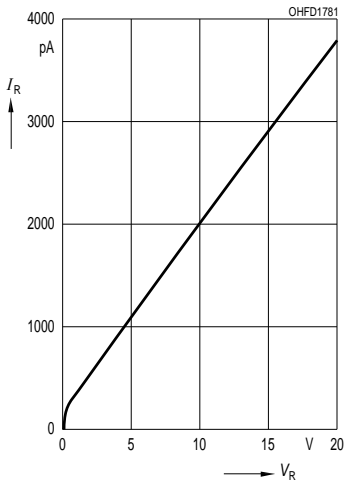
**Photocurrent  $I_P = f(E_e)$ ,  $V_R = 5 V$**   
**Open-Circuit Voltage  $V_O = f(E_e)$**



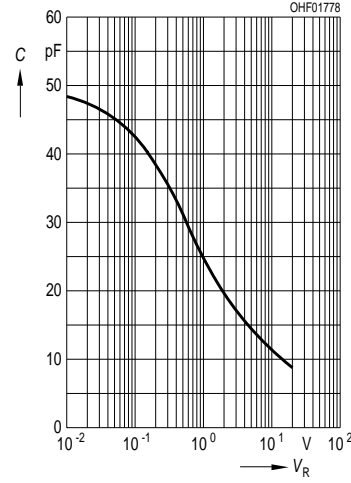
**Total Power Dissipation**  
 $P_{tot} = f(T_A)$



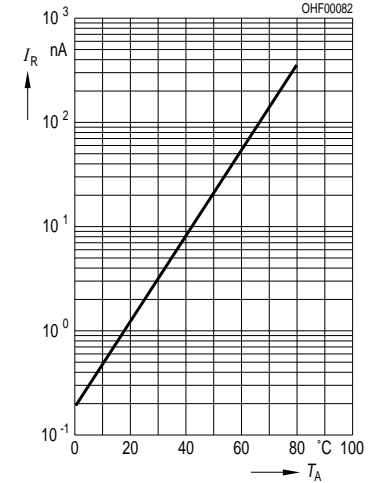
**Dark Current**  
 $I_R = f(V_R), E = 0$



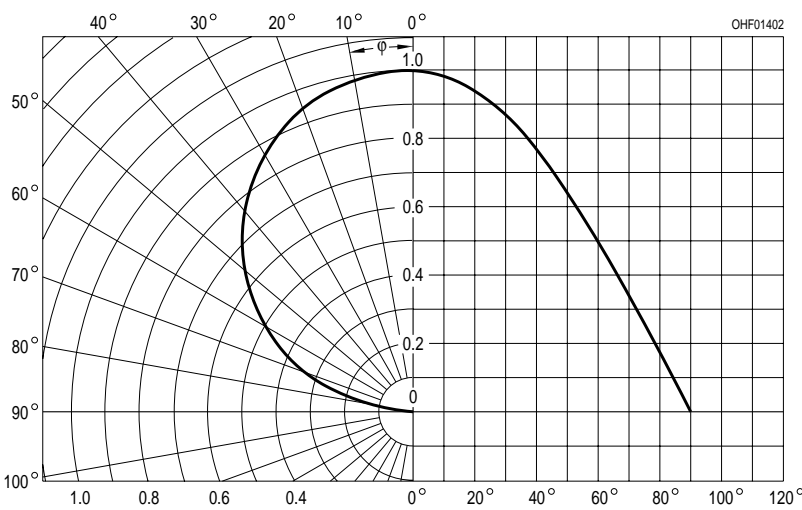
**Capacitance**  
 $C = f(V_R), f = 1 MHz, E = 0$



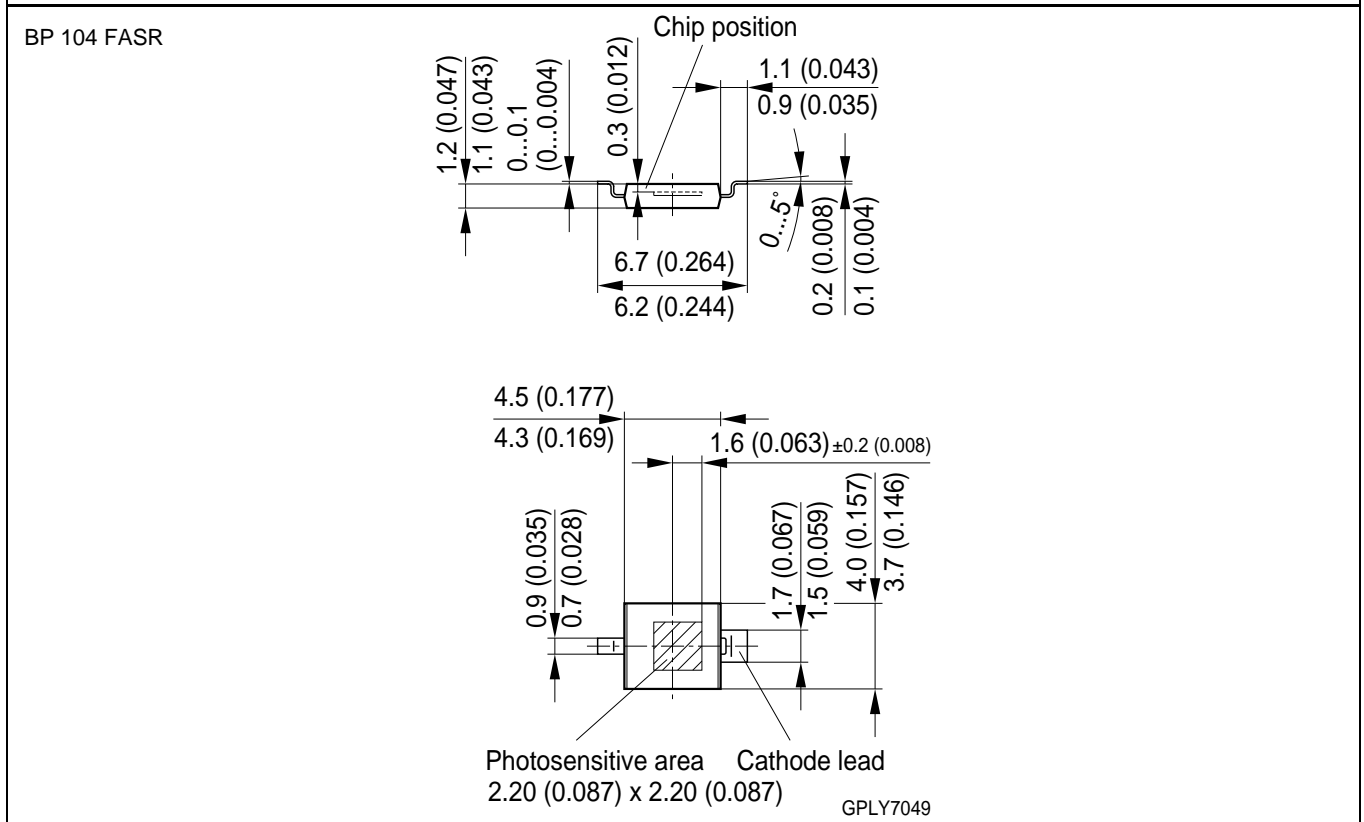
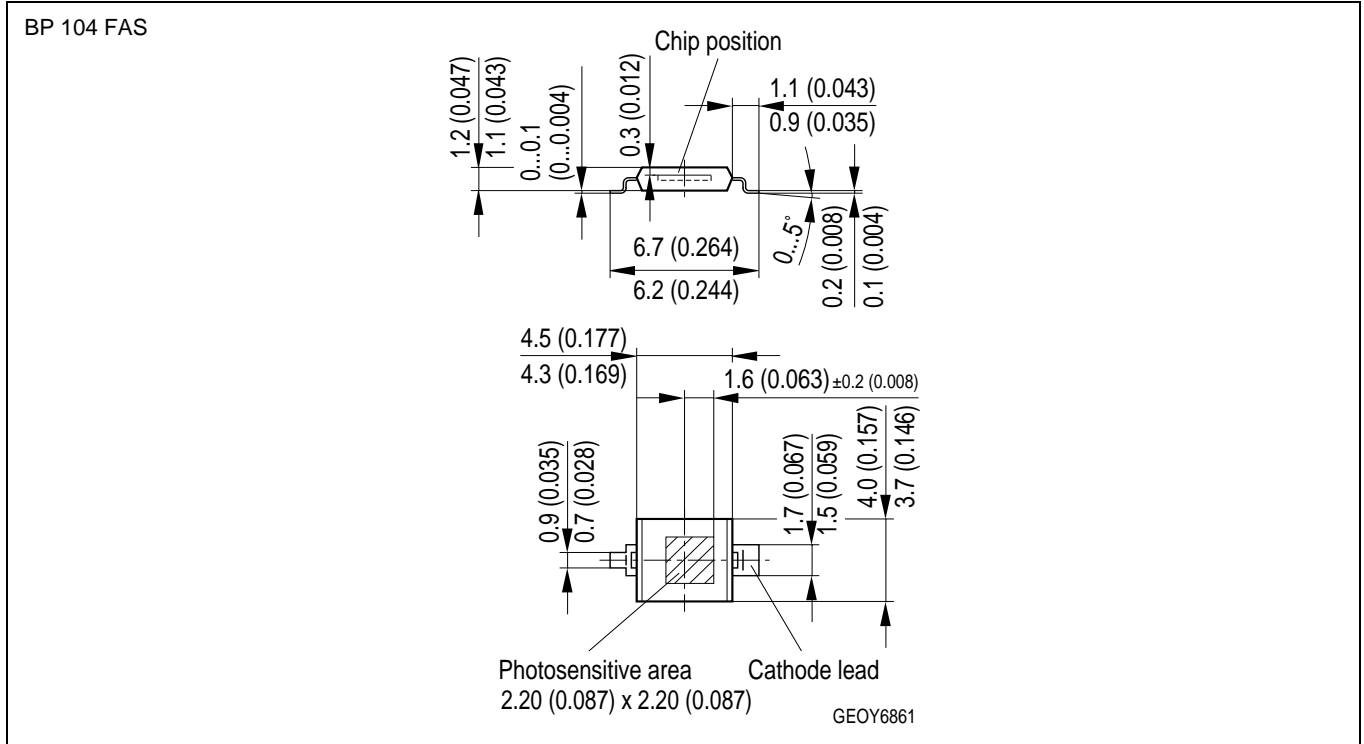
**Dark Current**  
 $I_R = f(T_A), V_R = 10 V, E = 0$



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



Maßzeichnung  
Package Outlines



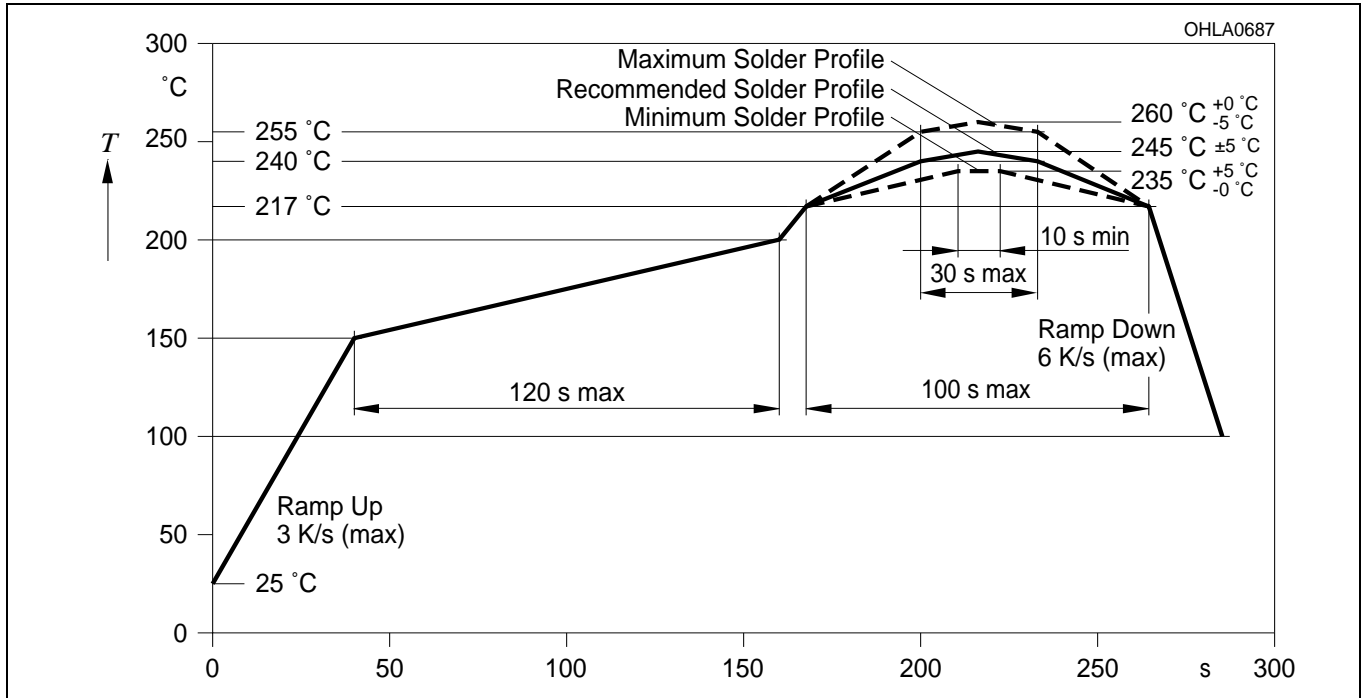
Maße in mm (inch) / Dimensions in mm (inch).

2007-04-18

5

**Lötbedingungen**  
**Soldering Conditions**  
**Reflow Lötprofil für bleifreies Löten**  
**Reflow Soldering Profile for lead free soldering**

Vorbehandlung nach JEDEC Level 4  
 Preconditioning acc. to JEDEC Level 4  
 (nach J-STD-020C)  
 (acc. to J-STD-020C)



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<sup>1</sup> 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.

<sup>2</sup> 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.