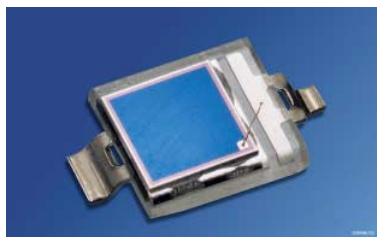
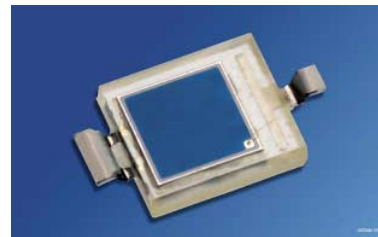


**Silizium-PIN-Fotodiode**  
**Silicon PIN Photodiode**  
**Lead (Pb) Free Product - RoHS Compliant**

**BP 104 S, BP 104 SR**



BP 104 S



BP 104 SR

**Wesentliche Merkmale**

- Speziell geeignet für Anwendungen im Bereich von 400 nm bis 1100 nm
- Kurze Schaltzeit (typ. 20 ns)
- Geeignet für Reflow-Löten
- SMT-fähig

**Anwendungen**

- Lichtschranken
- IR-Fernsteuerungen
- Industrieelektronik
- „Messen/Steuern/Regeln“

**Features**

- Especially suitable for applications from 400 nm to 1100 nm
- Short switching time (typ. 20 ns)
- Suitable for reflow soldering
- Suitable for SMT

**Applications**

- Photointerrupters
- IR remote controls
- Industrial electronics
- For control and drive circuits

Typ Type	Bestellnummer Ordering Code	Fotostrom, $E_v=1000 \text{ lx}$ , standard light A, $V_R = 5 \text{ V}$ Photocurrent $I_p (\mu\text{A})$
BP 104 S	Q65110A2626	55 ( $\geq 40$ )
BP 104 SR	Q65110A4262	55 ( $\geq 40$ )

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

**Kennwerte** ( $T_A = 25\text{ °C}$ , Normlicht A,  $T = 2856\text{ K}$ )  
**Characteristics** ( $T_A = 25\text{ °C}$ , standard light A,  $T = 2856\text{ K}$ )

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Fotostrom $V_R = 5\text{ V}$ Photocurrent	$I_P$	55 ( $\geq 40$ )	nA/lx
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\ max}$	850	nm
Spektraler Bereich der Fotoempfindlichkeit $S = 10\%$ von $S_{max}$ Spectral range of sensitivity $S = 10\%$ of $S_{max}$	$\lambda$	400 ... 1100	nm
Bestrahlungsempfindliche Fläche Radiant sensitive area	$A$	4.84	mm <sup>2</sup>
Abmessung der bestrahlungsempfindlichen Fläche Dimensions of radiant sensitive area	$L \times B$ $L \times W$	2.20 × 2.20	mm × mm
Halbwinkel Half angle	$\varphi$	±60	Grad deg.
Dunkelstrom, $V_R = 10\text{ V}$ Dark current	$I_R$	2 ( $\leq 30$ )	nA
Spektrale Fotoempfindlichkeit, $\lambda = 850\text{ nm}$ Spectral sensitivity	$S_\lambda$	0.62	A/W
Quantenausbeute, $\lambda = 850\text{ nm}$ Quantum yield	$\eta$	0.90	Electrons Photon
Leerlaufspannung, $E_V = 1000\text{ lx}$ Open-circuit voltage	$V_O$	360 ( $\geq 280$ )	mV

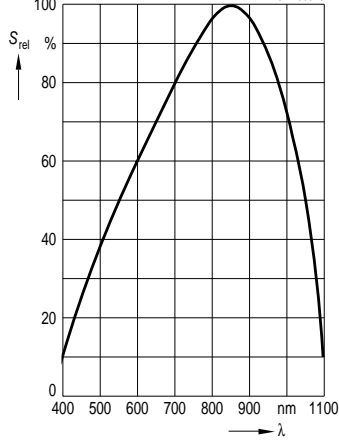
**Kennwerte** ( $T_A = 25\text{ °C}$ , Normlicht A,  $T = 2856\text{ K}$ )

**Characteristics** ( $T_A = 25\text{ °C}$ , standard light A,  $T = 2856\text{ K}$ ) (cont'd)

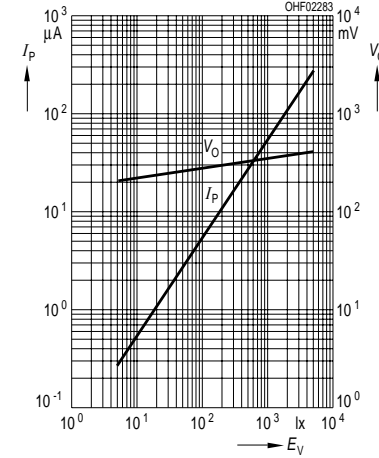
Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Kurzschlussstrom, $E_V = 1000\text{ lx}$ Short-circuit current	$I_{SC}$	50	$\mu\text{A}$
Anstiegs- und Abfallzeit des Fotostromes Rise and fall time of the photocurrent $R_L = 50\ \Omega$ ; $V_R = 5\text{ V}$ ; $\lambda = 850\text{ nm}$ ; $I_p = 800\ \mu\text{A}$	$t_r, t_f$	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 $V_O$	$TK_V$	-2.6	mV/K
Temperaturkoeffizient von $I_{SC}$ Temperature coefficient of $I_{SC}$	$TK_I$	0.18	%/K
Rauschäquivalente Strahlungsleistung Noise equivalent power $V_R = 10\text{ V}$ , $\lambda = 850\text{ nm}$	$NEP$	$3.6 \times 10^{-14}$	$\frac{\text{W}}{\sqrt{\text{Hz}}}$
Nachweisgrenze, $V_R = 10\text{ V}$ , $\lambda = 850\text{ nm}$ Detection limit	$D^*$	$6.1 \times 10^{12}$	$\frac{\text{cm} \times \sqrt{\text{Hz}}}{\text{W}}$

**Relative Spectral Sensitivity**

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

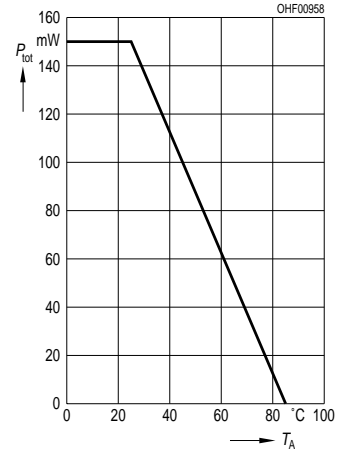


**Photocurrent  $I_P = f(E_V)$ ,  $V_R = 5 V$   
Open-Circuit Voltage  $V_O = f(E_V)$**



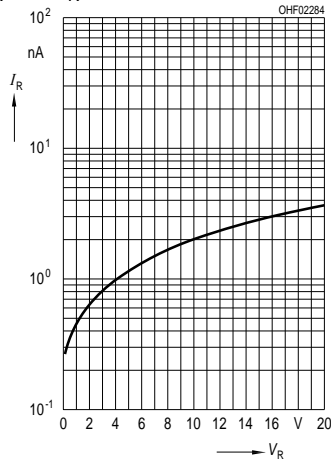
**Total Power Dissipation**

$P_{tot} = f(T_A)$



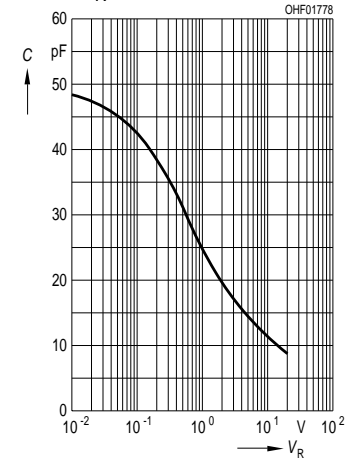
**Dark Current**

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



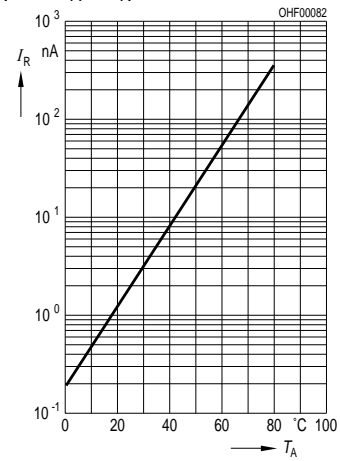
**Capacitance**

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



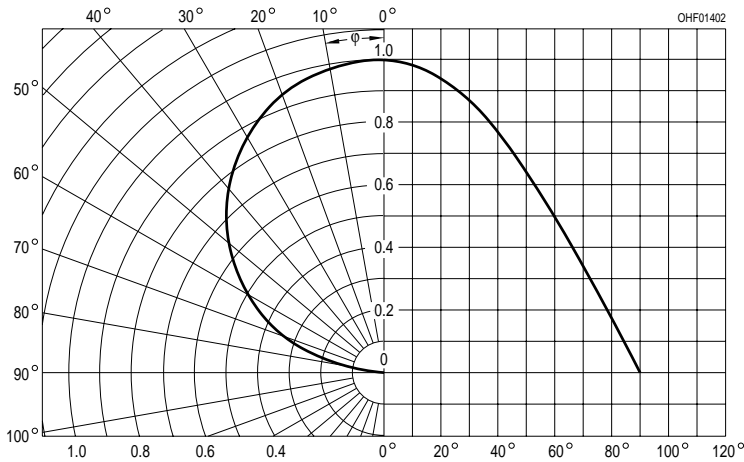
**Dark Current**

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

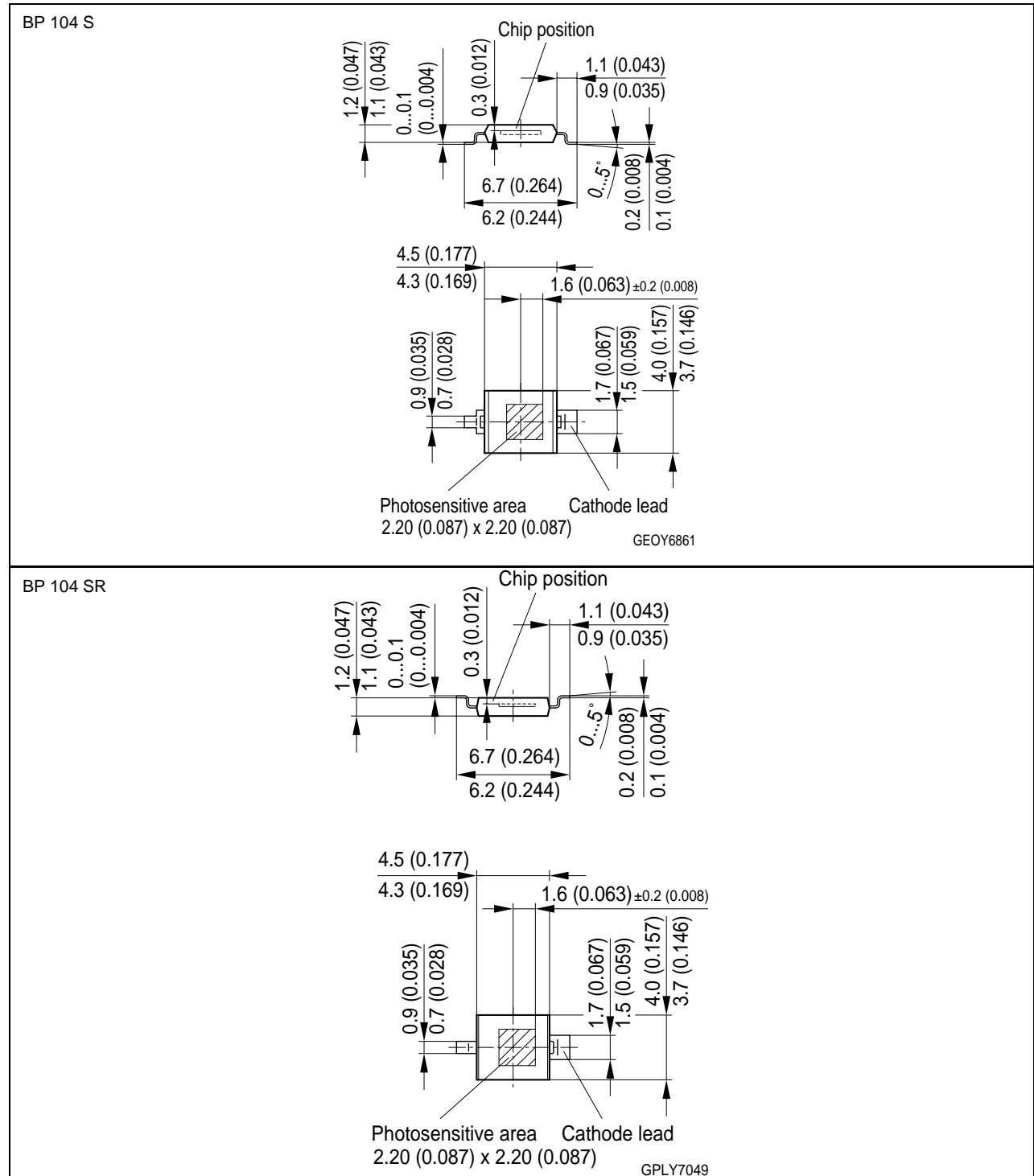


**Birectional Characteristics**

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



Maßzeichnung  
Package Outlines



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

**Lötbedingungen**

**Soldering Conditions**

**Reflow Lötprofil für bleifreies Löten**

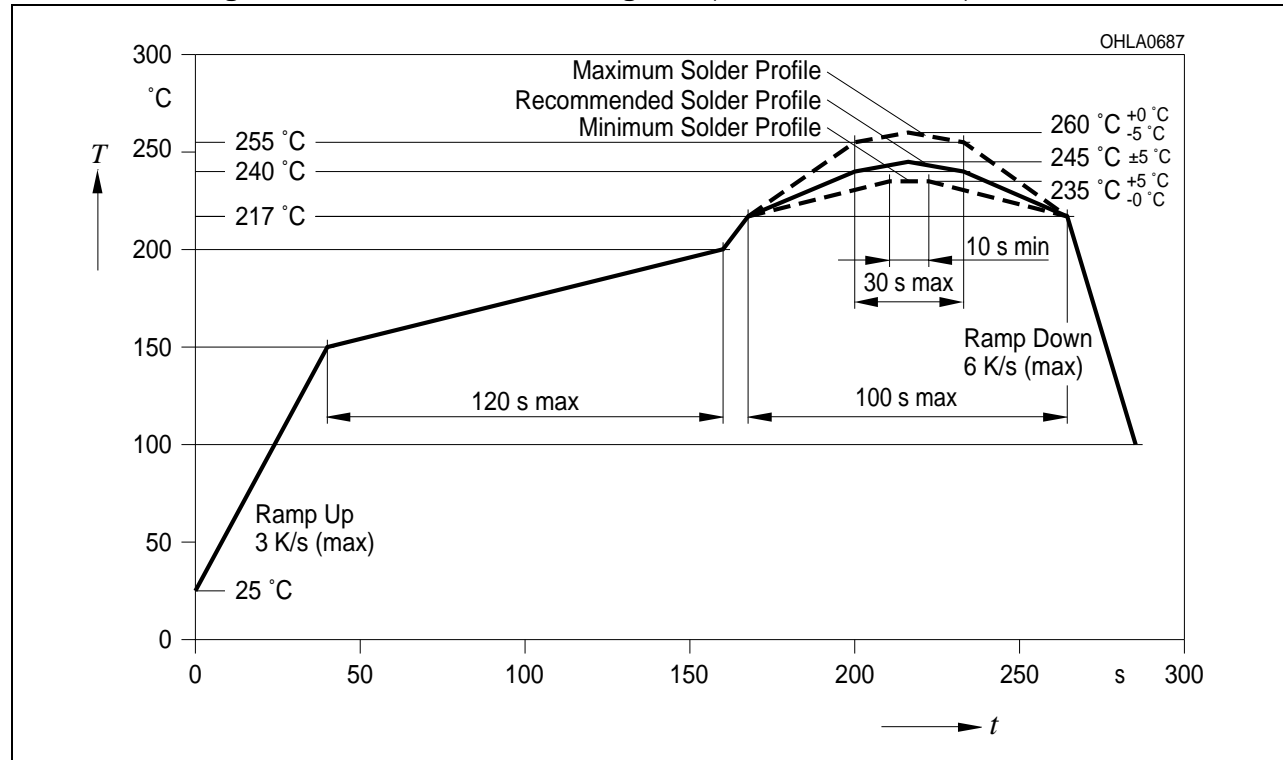
**Reflow Soldering Profile for lead free soldering**

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>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.