

**Grenzwerte**  
**Maximum Ratings**

| Bezeichnung<br>Parameter                                                 | Symbol<br>Symbol  | Wert<br>Value  | Einheit<br>Unit |
|--------------------------------------------------------------------------|-------------------|----------------|-----------------|
| Betriebs- und Lagertemperatur<br>Operating and storage temperature range | $T_{op}; T_{stg}$ | – 40 ... + 125 | °C              |
| Kollektor-Emitterspannung<br>Collector-emitter voltage                   | $V_{CE}$          | 35             | V               |
| Kollektorstrom<br>Collector current                                      | $I_C$             | 100            | mA              |
| Kollektorspitzenstrom, $\tau < 10 \mu s$<br>Collector surge current      | $I_{CS}$          | 200            | mA              |
| Emitter-Basisspannung<br>Emitter-base voltage                            | $V_{EB}$          | 7              | V               |
| Verlustleistung, $T_A = 25 \text{ °C}$<br>Total power dissipation        | $P_{tot}$         | 200            | mW              |
| Wärmewiderstand<br>Thermal resistance                                    | $R_{thJA}$        | 500            | K/W             |

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

## Characteristics

| Bezeichnung<br>Parameter                                                                                                                                                                                                    | Symbol<br>Symbol                 | Wert<br>Value    | Einheit<br>Unit                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|------------------|--------------------------------|
| Wellenlänge der max. Fotoempfindlichkeit<br>Wavelength of max. sensitivity                                                                                                                                                  | $\lambda_{S\text{ max}}$         | 830              | nm                             |
| Spektraler Bereich der Fotoempfindlichkeit<br>$S = 10\%$ von $S_{\text{max}}$<br>Spectral range of sensitivity<br>$S = 10\%$ of $S_{\text{max}}$                                                                            | $\lambda$                        | 400 ... 1100     | nm                             |
| Bestrahlungsempfindliche Fläche<br>Radiant sensitive area                                                                                                                                                                   | $A$                              | 0.11             | mm <sup>2</sup>                |
| Abmessung der Chipfläche<br>Dimensions of chip area                                                                                                                                                                         | $L \times B$<br>$L \times W$     | $0.5 \times 0.5$ | mm × mm                        |
| Halbwinkel<br>Half angle                                                                                                                                                                                                    | $\varphi$                        | $\pm 8$          | Grad<br>deg.                   |
| Fotostrom der Kollektor-Basis-Fotodiode<br>Photocurrent of collector-base photodiode<br>$E_e = 0.5\text{ mW/cm}^2$ , $V_{CB} = 5\text{ V}$<br>$E_v = 1000\text{ lx}$ , Normlicht/standard light A,<br>$V_{CB} = 5\text{ V}$ | $I_{PCB}$<br>$I_{PCB}$           | 5.5<br>17        | $\mu\text{A}$<br>$\mu\text{A}$ |
| Kapazität<br>Capacitance<br>$V_{CE} = 0\text{ V}$ , $f = 1\text{ MHz}$ , $E = 0$<br>$V_{CB} = 0\text{ V}$ , $f = 1\text{ MHz}$ , $E = 0$<br>$V_{EB} = 0\text{ V}$ , $f = 1\text{ MHz}$ , $E = 0$                            | $C_{CE}$<br>$C_{CB}$<br>$C_{EB}$ | 7.5<br>14<br>19  | pF<br>pF<br>pF                 |
| Dunkelstrom<br>Dark current<br>$V_{CE} = 20\text{ V}$ , $E = 0$                                                                                                                                                             | $I_{CEO}$                        | 1 ( $\leq 50$ )  | nA                             |

Die Fototransistoren werden nach ihrer Fotoempfindlichkeit gruppiert und mit arabischen Ziffern gekennzeichnet.

The phototransistors are grouped according to their spectral sensitivity and distinguished by arabian figures.

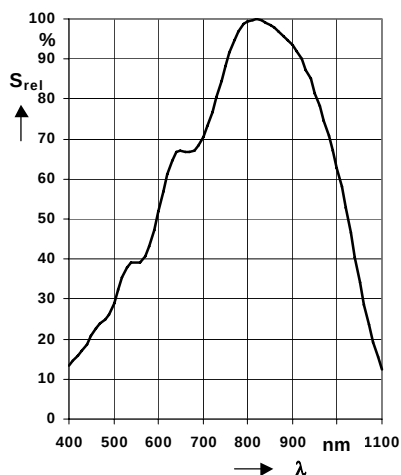
| Bezeichnung<br>Parameter                                                                                                                                                                          | Symbol<br>Symbol          | Wert<br>Value    |                  |                   |                   | Einheit<br>Unit |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------------------|------------------|-------------------|-------------------|-----------------|
|                                                                                                                                                                                                   |                           | -2               | -3               | -4                | -5                |                 |
| Fotostrom<br>Photocurrent<br>$E_e = 0.5 \text{ mW/cm}^2$ , $\lambda = 950 \text{ nm}$ , $V_{CE} = 5 \text{ V}$<br>$E_v = 1000 \text{ lx}$ , Normlicht/standard light A,<br>$V_{CE} = 5 \text{ V}$ | $I_{PCE}$<br>$I_{PCE}$    | 0.5...1.0<br>2.4 | 0.8...1.6<br>3.8 | 1.25...2.5<br>5.8 | $\geq 2.0$<br>9.6 | mA<br>mA        |
| Anstiegszeit/Abfallzeit<br>Rise and fall time<br>$I_C = 1 \text{ mA}$ , $V_{CC} = 5 \text{ V}$ , $R_L = 1 \text{ k}\Omega$                                                                        | $t_r$ , $t_f$             | 5                | 7                | 9                 | 12                | $\mu\text{s}$   |
| Kollektor-Emitter-Sättigungsspannung<br>Collector-emitter saturation voltage<br>$I_C = I_{PCEmin}^{1)} \times 0.3$ ,<br>$E_e = 0.5 \text{ mW/cm}^2$                                               | $V_{CEsat}$               | 150              | 150              | 160               | 180               | mV              |
| Stromverstärkung<br>Current gain<br>$E_e = 0.5 \text{ mW/cm}^2$ , $V_{CE} = 5 \text{ V}$                                                                                                          | $\frac{I_{PCE}}{I_{PCB}}$ | 140              | 220              | 340               | 550               | –               |

<sup>1)</sup>  $I_{PCEmin}$  ist der minimale Fotostrom der jeweiligen Gruppe.

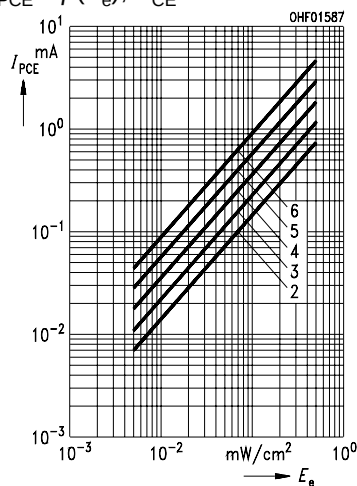
<sup>1)</sup>  $I_{PCEmin}$  is the min. photocurrent of the specified group.

**Relative Spectral sensitivity**

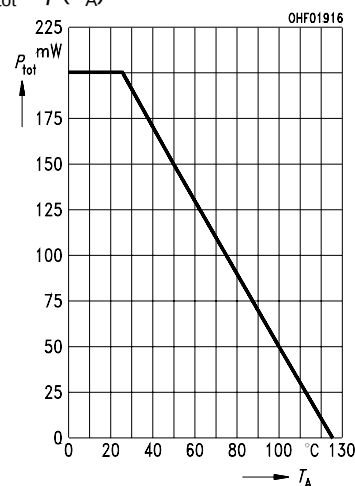
$$S_{\text{rel}} = f(\lambda)$$

**Photocurrent**

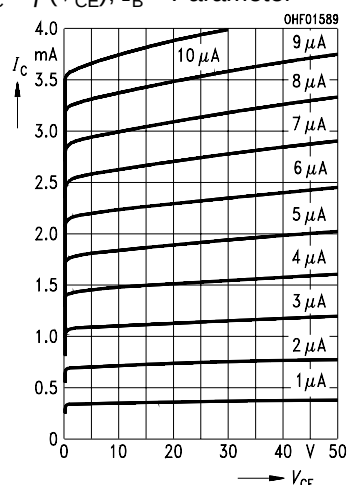
$$I_{\text{PCE}} = f(E_e), V_{\text{CE}} = 5 \text{ V}$$

**Total Power Dissipation**

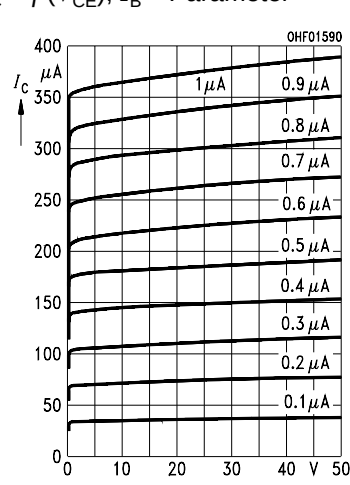
$$P_{\text{tot}} = f(T_A)$$

**Output Characteristics**

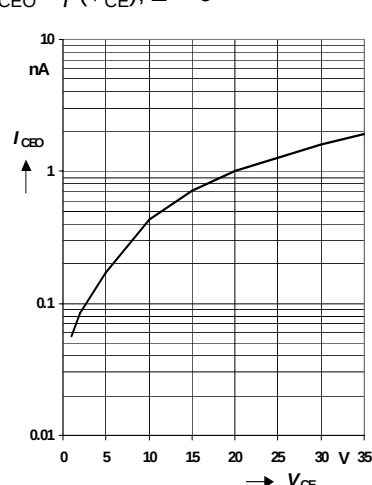
$$I_C = f(V_{\text{CE}}), I_B = \text{Parameter}$$

**Output Characteristics**

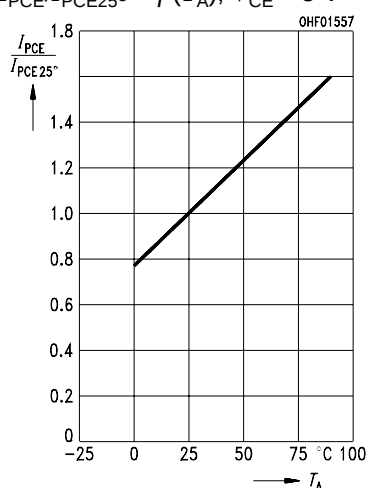
$$I_C = f(V_{\text{CE}}), I_B = \text{Parameter}$$

**Dark Current**

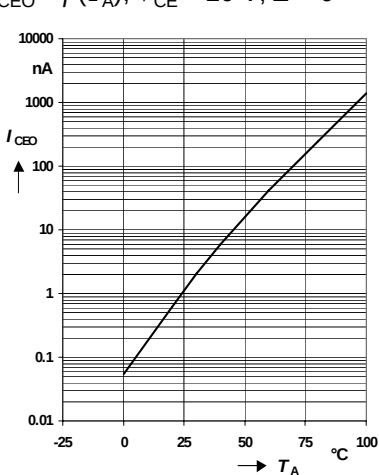
$$I_{\text{CEO}} = f(V_{\text{CE}}), E = 0$$

**Photocurrent**

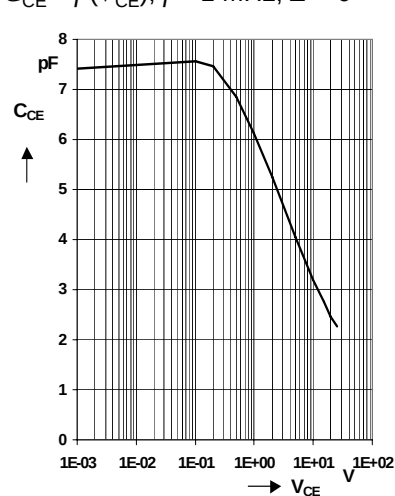
$$I_{\text{PCE}}/I_{\text{PCE}25^\circ} = f(T_A), V_{\text{CE}} = 5 \text{ V}$$

**Dark Current**

$$I_{\text{CEO}} = f(T_A), V_{\text{CE}} = 20 \text{ V}, E = 0$$

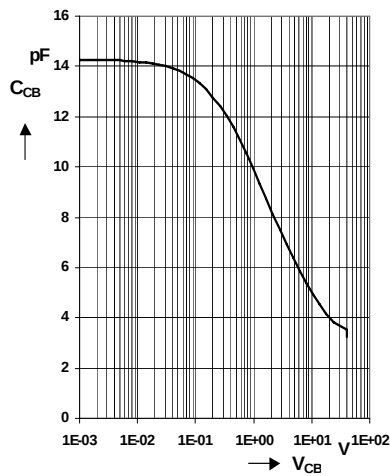
**Collector-Emitter Capacitance**

$$C_{\text{CE}} = f(V_{\text{CE}}), f = 1 \text{ MHz}, E = 0$$



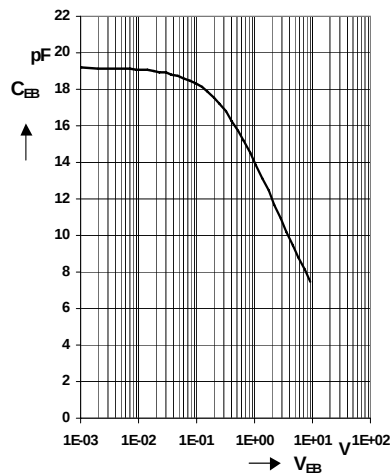
Collector-Base Capacitance

$C_{CB} = f(V_{CB}), f = 1\text{ MHz}, E = 0$



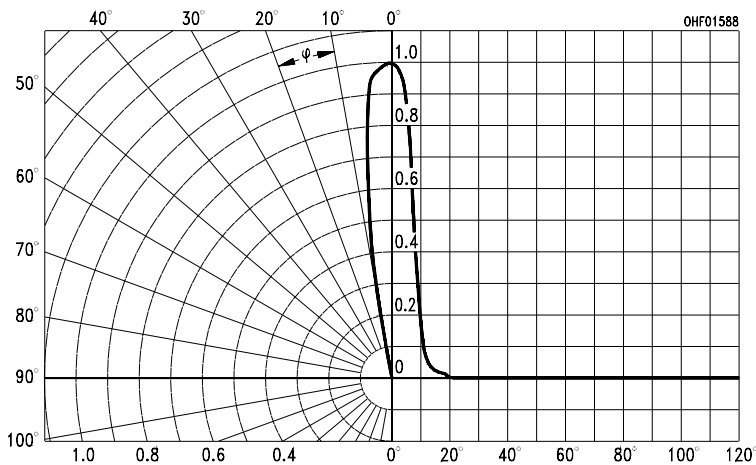
Emitter-Base Capacitance

$C_{EB} = f(V_{EB}), f = 1\text{ MHz}, E = 0$

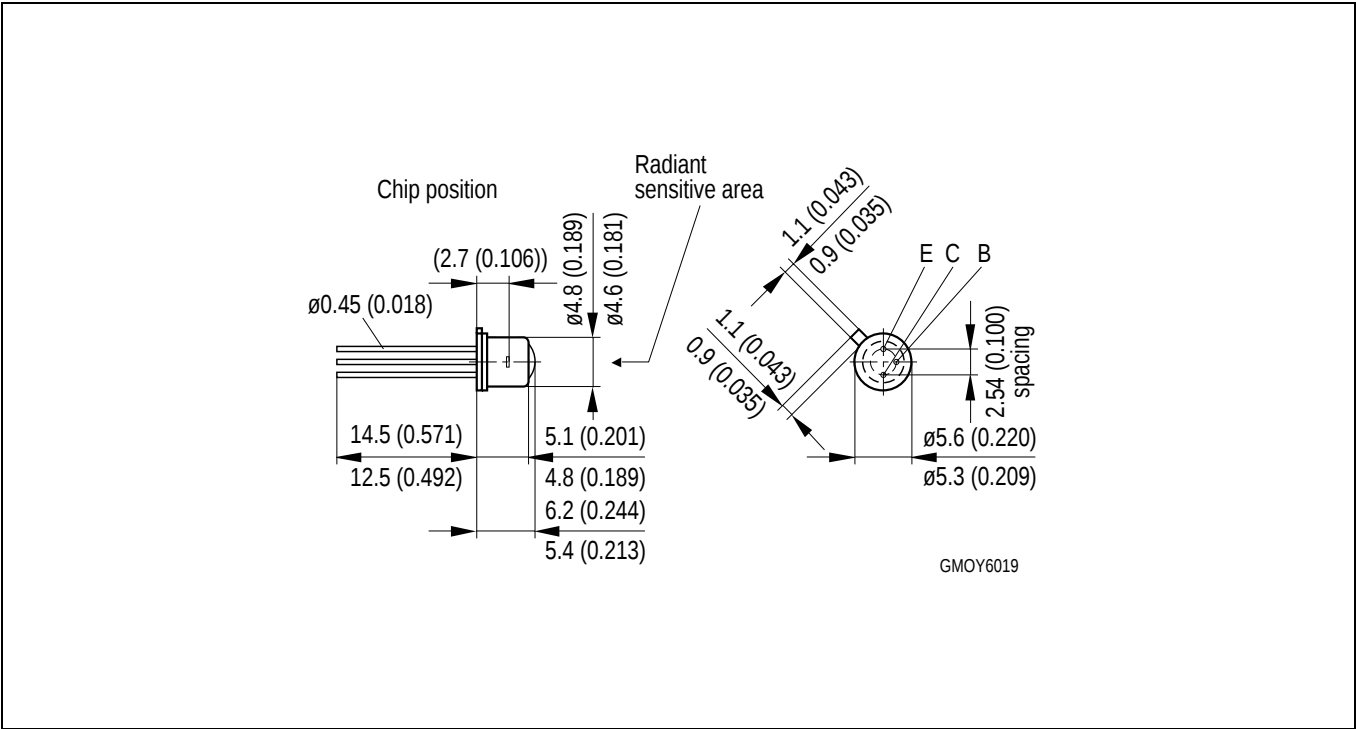


Directional Characteristics

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



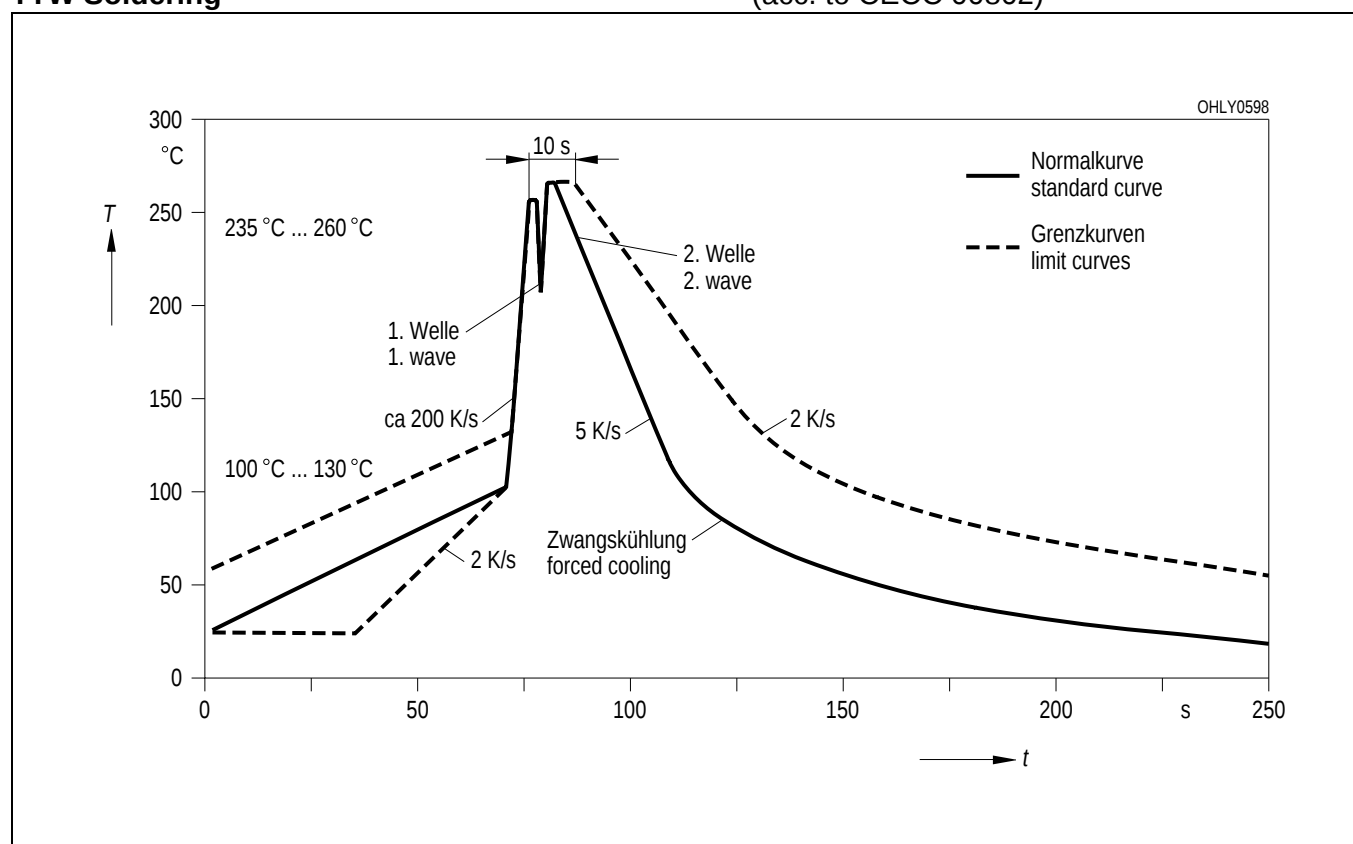
Maßzeichnung  
Package Outlines



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

**Lötbedingungen**  
**Soldering Conditions**  
**Wellenlöten (TTW)**  
**TTW Soldering**

(nach CECC 00802)  
 (acc. to CECC 00802)



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2007-04-03

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