

## Excellent Integrated System Limited

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[OSRAM Opto Semiconductors, Inc.](#)  
[SFH 3219-Z](#)

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**NPN-Silizium-Fototransistor in SMT-Gehäuse mit Linse**  
**Silicon NPN Phototransistor in SMT-Package with lens**  
**Lead (Pb) Free Product - RoHS Compliant**

**SFH 3219**



**This data sheet is under PCN-revision (see separate data sheet with respect to OS-PCN-2010-033-A). Do not use this version for design-in**

**Wesentliche Merkmale**

- TOPLED mit Linse
- Speziell geeignet für Anwendungen im Bereich von 430 nm bis 1150 nm
- Hohe Linearität
- Für alle Lötverfahren geeignet
- Gehäusegleich mit SFH 4209, SFH 4219, SFH 4289

**Features**

- TOPLED with lens
- Especially suitable for applications from 430 nm to 1150 nm
- High linearity
- Suitable for all soldering methods
- Same package as SFH 4209, SFH 4219, SFH 4289

**Anwendungen**

- Miniaturlichtschranken
- Industrieelektronik
- „Messen/Steuern/Regeln“
- Sensorik

**Applications**

- Miniature photointerrupters
- Industrial electronics
- For control and drive circuits
- Sensor technology

Typ Type	Bestellnummer Ordering Code	Fotostrom , ( $E_e=0,1\text{mW/cm}^2, \lambda=950\text{nm}$ $V_{CE} = 5\text{ V}$ ) Photocurrent $I_{pce}$ ( $\mu\text{A}$ )
SFH 3219	Q65110A2651	> 63

## SFH 3219

### 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
Kollektor-Emitterspannung Collector-emitter voltage	$V_{CE}$	35	V
Kollektorstrom Collector current	$I_C$	15	mA
Kollektorspitzenstrom, $\tau < 10 \mu s$ Collector surge current	$I_{CS}$	75	mA
Verlustleistung, $T_A = 25 \text{ °C}$ Total power dissipation	$P_{tot}$	165	mW
Wärmewiderstand für Montage auf PC-Board Thermal resistance for mounting on pcb	$R_{thJA}$	450	K/W

## SFH 3219

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

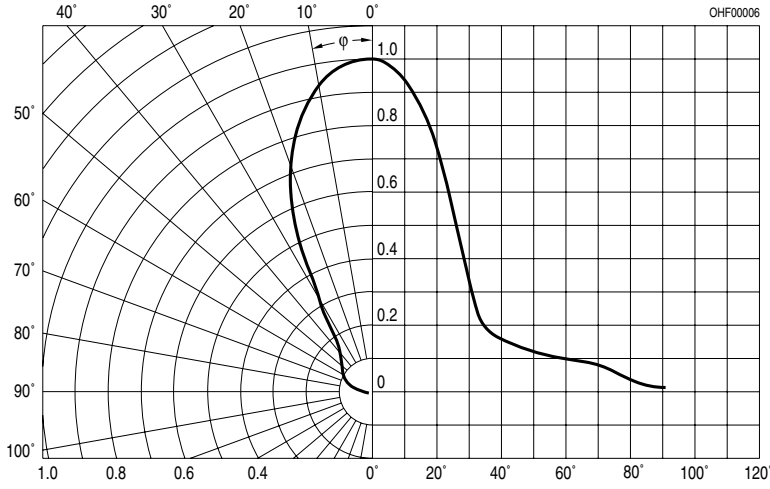
### Characteristics

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\text{ max}}$	990	nm
Spektraler Bereich der Fotoempfindlichkeit $S = 10\%$ von $S_{\text{max}}$ Spectral range of sensitivity $S = 10\%$ of $S_{\text{max}}$	$\lambda$	430 ... 1150	nm
Bestrahlungsempfindliche Fläche ( $\varnothing 220\text{ }\mu\text{m}$ ) Radiant sensitive area	$A$	0.038	$\text{mm}^2$
Abmessung der Chipfläche Dimensions of chip area	$L \times B$ $L \times W$	$0.45 \times 0.45$	$\text{mm} \times \text{mm}$
Halbwinkel Half angle	$\varphi$	$\pm 25$	Grad deg.
Kapazität, $V_{\text{CE}} = 0\text{ V}$ , $f = 1\text{ MHz}$ , $E = 0$ Capacitance	$C_{\text{CE}}$	5.0	pF
Dunkelstrom Dark current $V_{\text{CE}} = 20\text{ V}$ , $E = 0$	$I_{\text{CEO}}$	1 ( $\leq 50$ )	nA
Fotostrom Photo current $E_e = 0.1\text{ mW/cm}^2$ , $V_{\text{CE}} = 5\text{ V}$	$I_{\text{PCE}}$	$\geq 63$	$\mu\text{A}$
Anstiegszeit/Abfallzeit Rise and fall time $I_{\text{C}} = 1\text{ mA}$ , $V_{\text{CC}} = 5\text{ V}$ , $R_{\text{L}} = 1\text{ k}\Omega$	$t_r$ , $t_f$	7	$\mu\text{s}$
Kollektor-Emitter-Sättigungsspannung Collector-emitter saturation voltage $I_{\text{C}} = 20\text{ }\mu\text{A}$ $E_e = 0.1\text{ mW/cm}^2$	$V_{\text{CEsat}}$	150	mV

**SFH 3219**

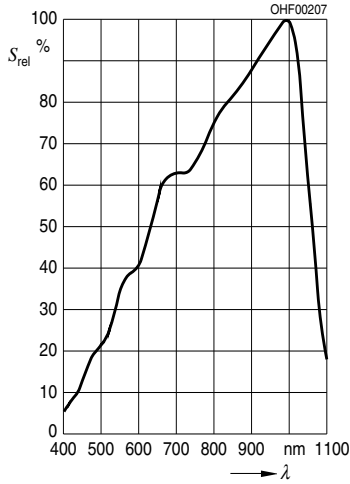
**Directional Characteristics**

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



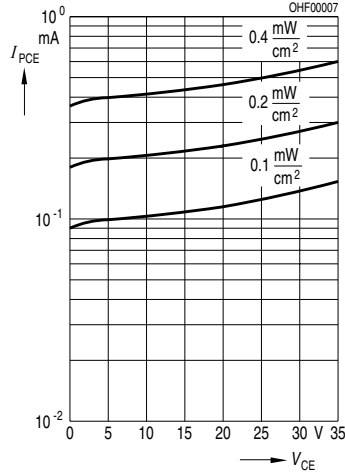
**Relative Spectral Sensitivity**

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



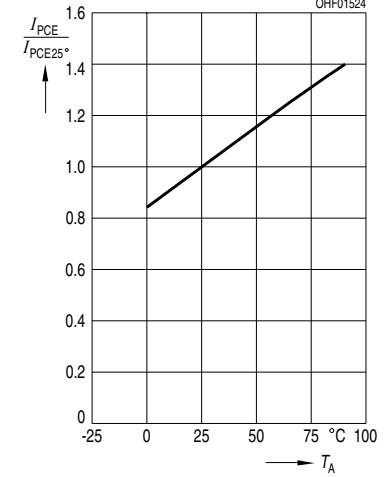
**Photocurrent**

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



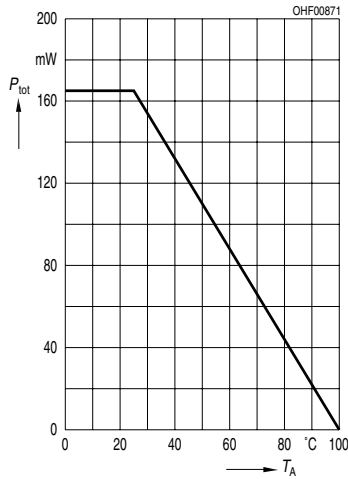
**Photocurrent**

$I_{PCE} / I_{PCE25^\circ} = f(T_A), V_{CE} = 5 \text{ V}$



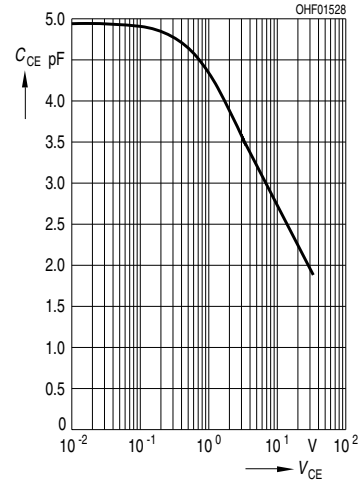
**Total Power Dissipation**

$P_{tot} = f(T_A)$



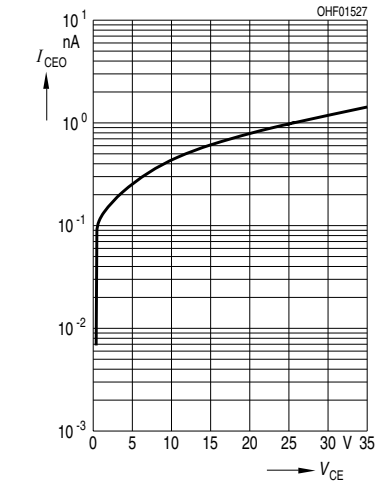
**Capacitance**

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



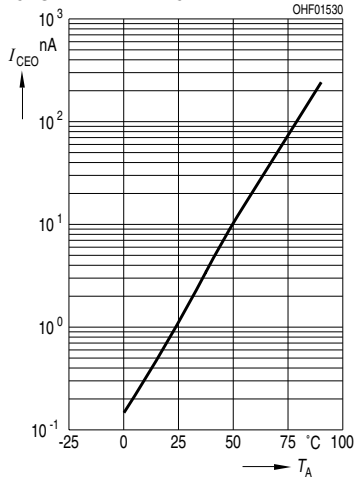
**Dark Current**

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



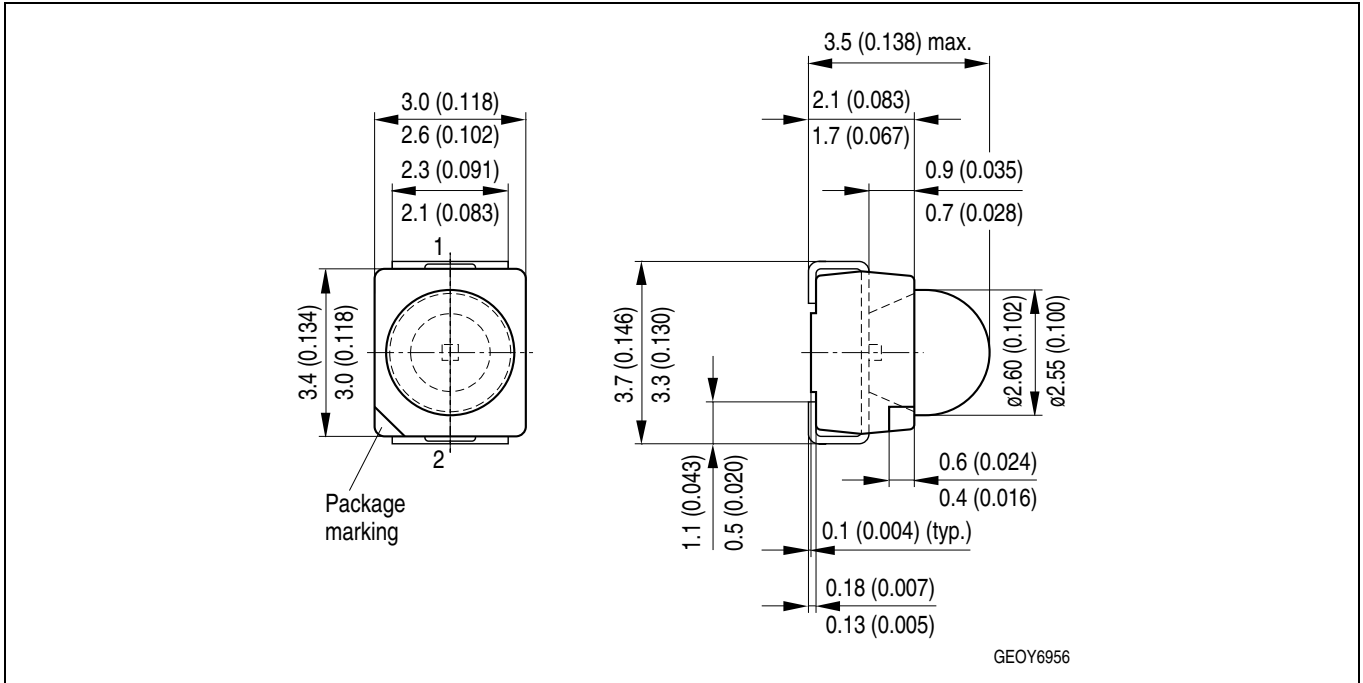
**Dark Current**

$I_{CEO} = f(T_A), V_{CE} = 5 \text{ V}, E = 0$



**SFH 3219**

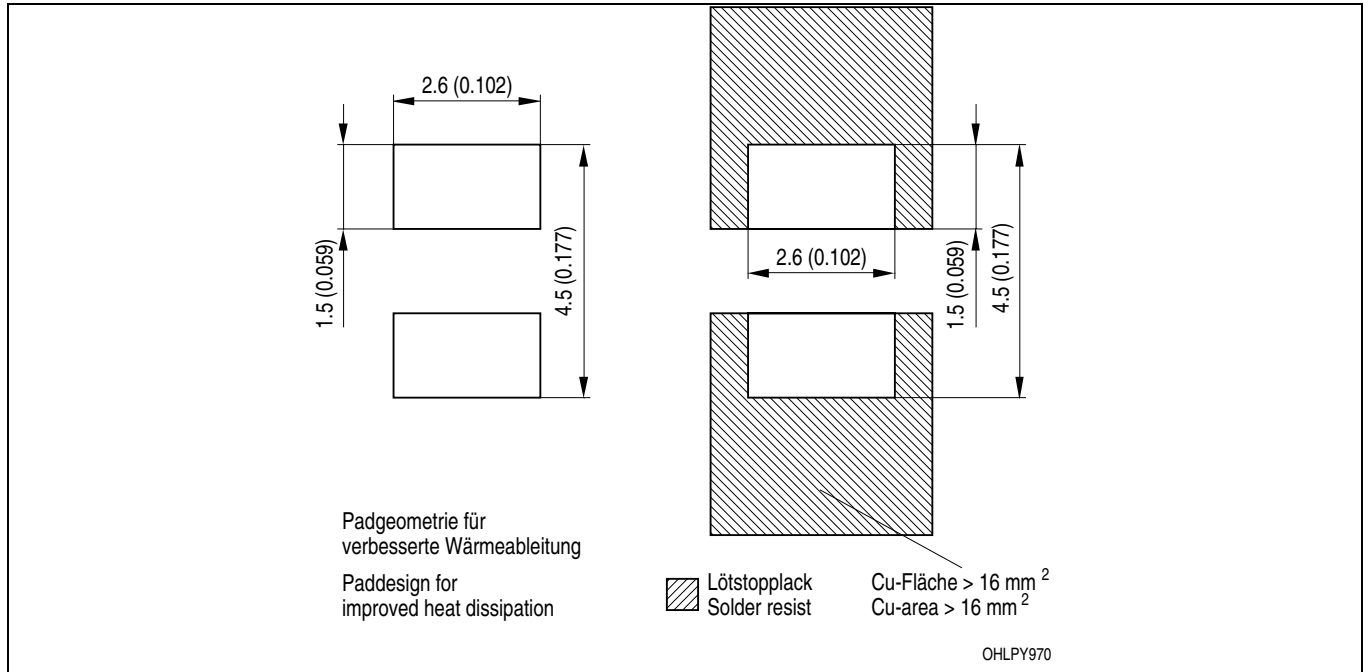
**Maßzeichnung  
 Package Outlines**



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

Gehäuse / Package	TOPLED® mit Linse (P-LCC-2) / TOPLED® with lens (P-LCC-2)
Anschlussbelegung pin configuration	1 = Emitter / emitter 2 = Kollektor / collector
Farbe Color	weiß white

**Empfohlenes Lötpaddesign  
 Recommended Solderpad Design**



**Lötbedingungen**

**Soldering Conditions**

**Reflow Lötprofil für bleifreies Löt**

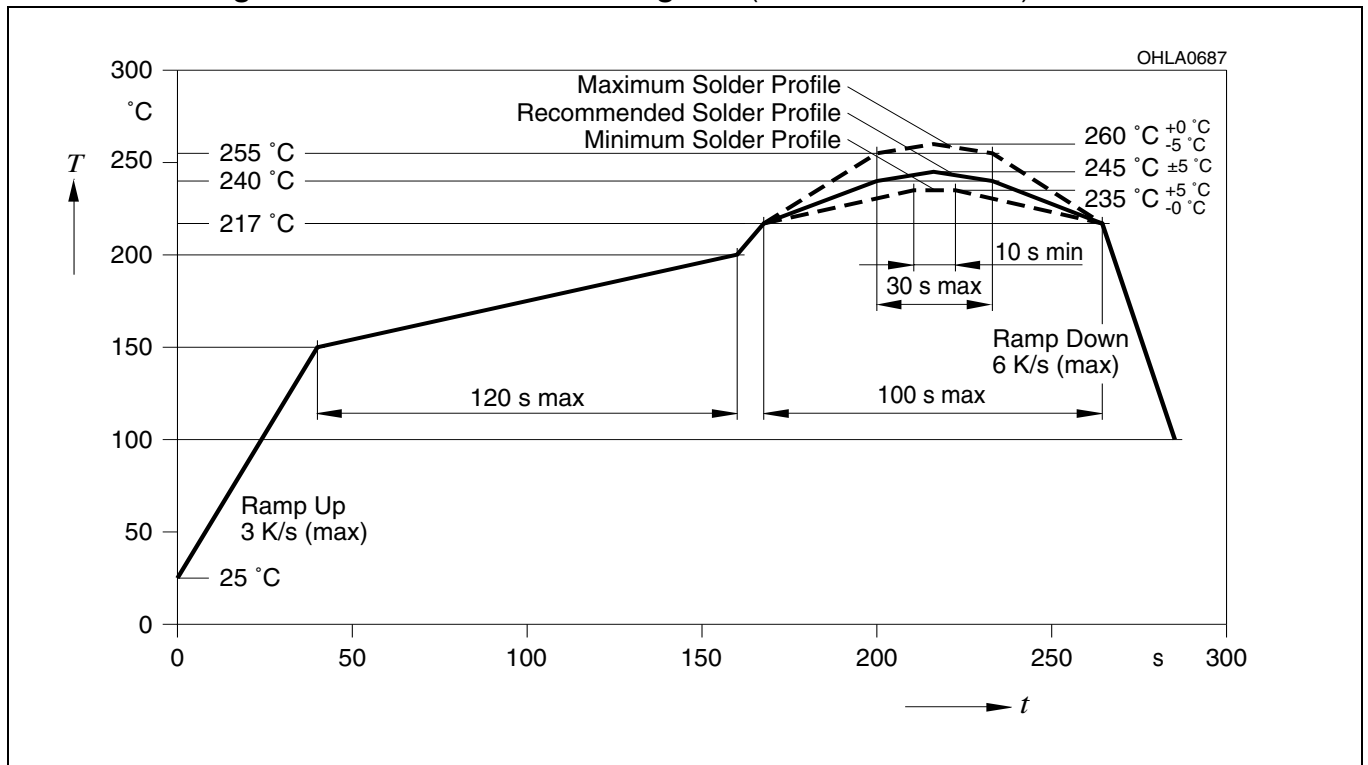
**Reflow Soldering Profile for lead free soldering**

**Vorbehandlung nach JEDEC Level 2**

**Preconditioning acc. to JEDEC Level 2**

**(nach J-STD-020C)**

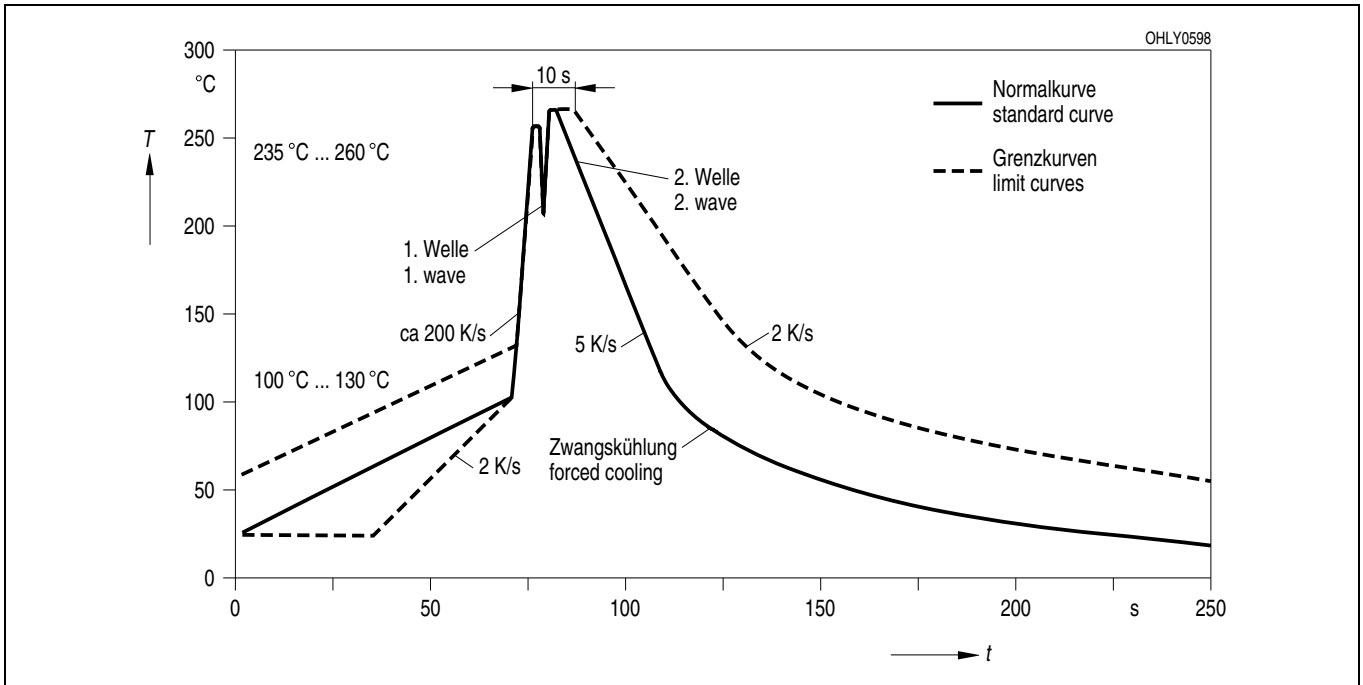
**(acc. to J-STD-020C)**





**Wellenlöten (TTW)**  
**TTW Soldering**

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



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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.

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