Multi TOPLED mit LED und Fototransistor-Detektor
Multi TOPLED with LED and Phototransistor-Detector

SFH 7225
SFH 7226

Wesentliche Merkmale

- Anzeigefunktion kann durch eingebauten Fototransistor überwacht werden
- SFH 7225: gelbe LED
- SFH 7226: super-rote LED
- Dominantwellenlänge:
  SFH 7225: 589 nm
  SFH 7226: 630 nm
- Silizium-Fototransistor
- Geringe Sättigungsspannung
- Emitter und Diode galvanisch getrennt

Features

- Display function can be controlled by built-in phototransistor
- SFH 7225: yellow LED
- SFH 7226: super-red LED
- Dominant wavelength:
  SFH 7225: 589 nm
  SFH 7226: 630 nm
- Silicon phototransistor
- Low saturation voltage
- Emitter and detector electrically isolated

Anwendungen

- Anzeige mit Funktionskontrolle

Applications

- Display with controlling function

Typ Type	Gehäuse Package	Lichtstärke Luminous Intensity I_F = 20 mA, t_p = 20 mA I_V (mcd)	Bestellnummer Ordering Code
SFH 7225-Q/R	SMT Multi TOPLED	63 … 200	Q62702-P5319
SFH 7226-P/Q	SMT Multi TOPLED	40 … 125	Q62702-P5320

Grenzwerte
Maximum Ratings

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Betriebstemperatur Operating temperature range	T_{op}	– 40 … + 100	°C
Lagertemperatur Storage temperature range	T_{stg}	– 40 … + 100	°C

Sender
Emitter

Sperrspannung Reverse voltage	V_R	3	V
Durchlassstrom Forward current	I_F (DC)	20	mA
Verlustleistung Total power dissipation	P_{tot}	80	mW
Wärmewiderstand Thermal resistance Sperrschicht/Umgebung Junction/ambient Sperrschicht/Lötpad Junction/solder point Montage auf PC-Board FR4 Mounted on PC board FR4	 $R_{th\ JA}$ $R_{th\ JS}$	 800 600[1)] 500 340[1)]	 K/W K/W K/W K/W

Empfänger (Si-Fototransistor)
Detector (Silicon phototransistor)

Kollektor-Emitterspannung Collector-emitter voltage	V_{CE}	35	V
Kollektorstrom Collector current	I_C	15	mA
Kollektorspitzenstrom, t_p < 10 µs Collector surge current	I_{CS}	75	mA
Verlustleistung Total power dissipation	P_{tot}	90	mW

[1)] This value is valid only when the power dissipation of the photo transistor is limited to max. 2.5 mW.

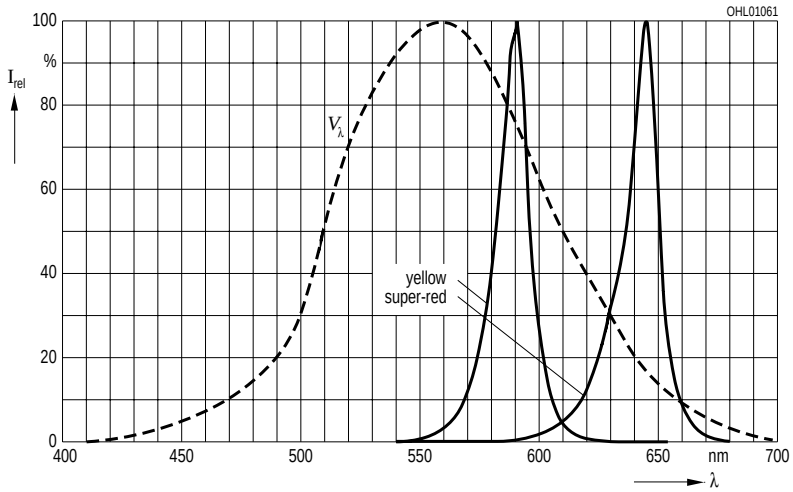
Kennwerte (T_A = 25 °C)
Characteristics

Bezeichnung **Description**	**Symbol** **Symbol**	**Wert** **Value**		**Einheit** **Unit**
		SFH 7225	**SFH 7226**	
Sender **Emitter**				
Wellenlänge der Strahlung, I_F = 20 mA Wavelength of peak emission	λ_{peak}	591	645	nm
Dominantwellenlänge, I_F = 20 mA Dominant wavelength	λ_{peak}	589	630	nm
Spektrale Bandbreite, I_F = 20 mA Spectral radiation bandwidth	$\Delta\lambda$	15	16	nm
Abstrahlwinkel Half angle	Φ	± 60	± 60	Grad Deg.
Durchlassspannung Forward voltage I_F = 20 mA, t_p = 20 ms	V_F	2.0 (≤ 2.6)	2.0 (≤ 2.6)	V
Sperrstrom, V_R = 3 V Reverse current	I_R	0.01 (< 10)	0.01 (< 10)	µA
Temperaturkoeffizient von λ_{dom} Temperature coefficient of λ_{dom} I_F = 20 mA	$TC_{\lambda dom}$	0.096	0.014	nm/K
Temperaturkoeffizient von λ_{peak} Temperature coefficient of λ_{peak} I_F = 20 mA	$TC_{\lambda peak}$	0.13	0.14	nm/K
Temperaturkoeffizient von V_F Temperature coefficient of V_F I_F = 20 mA	TC_{VF}	– 2.5	– 2.0	mV/K
Empfänger **Detector**				
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\ max}$	860		nm
Spektraler Bereich der Fotoempfindlichkeit S = 10% von S_{max} Spectral range of sensitivity S = 10% von S_{max}	λ	380 … 1150		nm

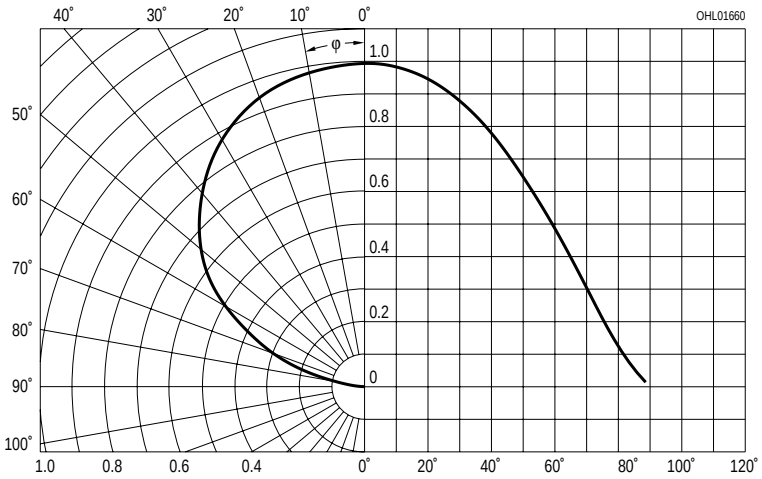
Kennwerte (T_A = 25 °C)
Characteristics (cont'd)

Bezeichnung **Description**	**Symbol** **Symbol**	**Wert** **Value**		**Einheit** **Unit**
		SFH 7225	**SFH 7226**	
Dunkelstrom, V_{CE} = 25 V Dark current	I_{CEO}	1 (< 200)		nA
Kapazität, V_{CE} = 0 V, f = 1 MHz, E = 0 Capacitance	C_{CE}	5		pF
Fremdlichtempfindlichkeit Sensitivity to ambient light E_V = 1000 lx, Normlicht A/standard light A, V_{CE} = 5 V	I_{CEtyp}	650		µA
MULTILED				
Übersprechen: Kollektor-Emitterstrom Crosstalk: collector-emitter current I_F = 20 mA, V_{CE} = 5 V	I_{CEtyp}	0.5 … 5	2 … 15	mA
Kollektor-Emitter-Sättigungsspannung Collector-emitter saturation voltage I_F = 20 mA, $I_C = 0.3 \times I_{CEmin}$	V_{CEsat}	< 0.4		V

Relative Spectral Emission $I_{rel} = f(\lambda)$, T_A = 25 °C, I_F = 20 mA
V(λ) = Standard Eye Response Curve

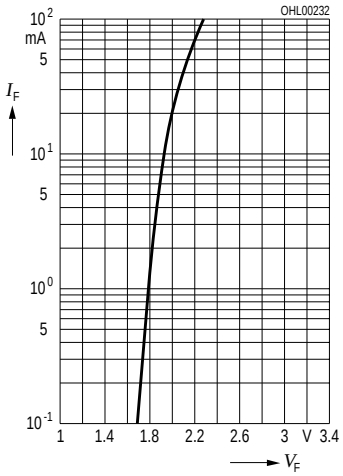


LED Radiation Characteristics $I_{rel} = f(\varphi)$
Phototransistor Directional Characteristics $S_{rel} = f(\varphi)$

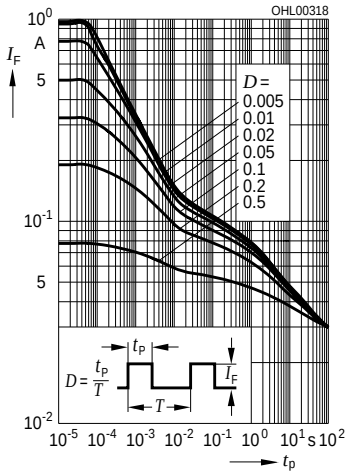


LED

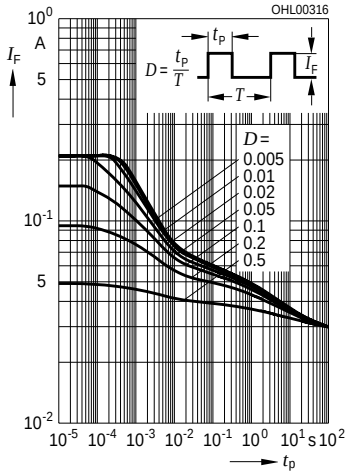
Forward Current
$I_F = f(V_F)$, T_A = 25 °C



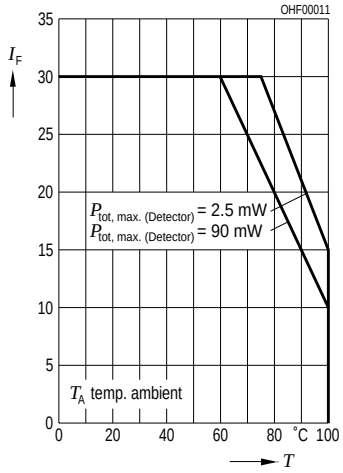
Perm. Pulse Handling Capability
$I_F = f(t_P)$, duty cycle$D$ = parameter, T_A = 25 °C, **SFH 7225**



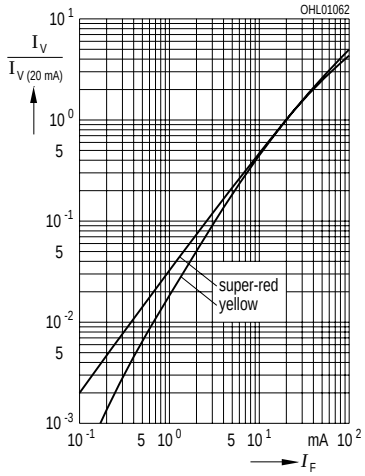
Perm. Pulse Handling Capability
$I_F = f(t_P)$, duty cycle D = parameter, T_A = 25 °C, **SFH 7226**



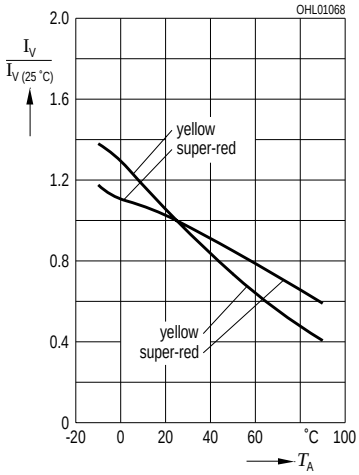
Max. Permissible Forward Current
$I_F = f(T_A)$



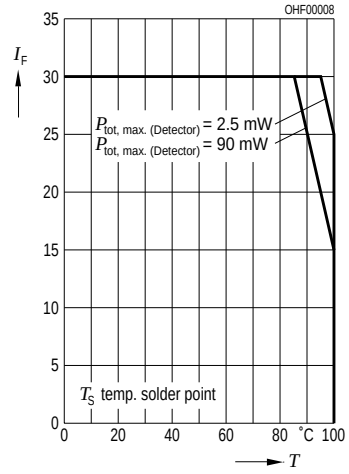
Relative Luminous Intensity
$I_V/I_{V(10\ mA)} = f(I_F)$, T_A = 25 °C



Rel. Luminous Intensity
$I_V/I_{V(25\ °C)} = f(T_A)$, I_F = 10 mA

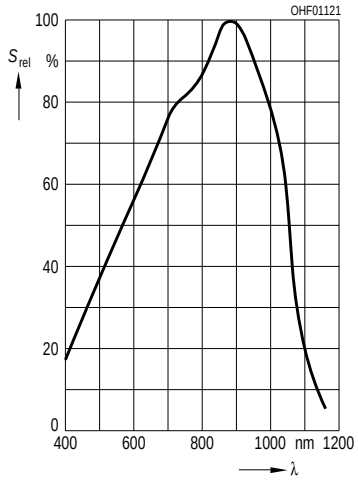


Max. Permissible Forward Current
$I_F = f(T_S)$

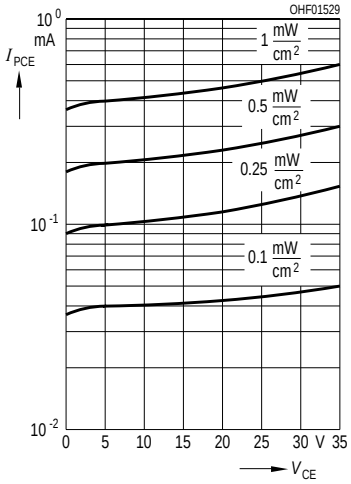


Phototransistor

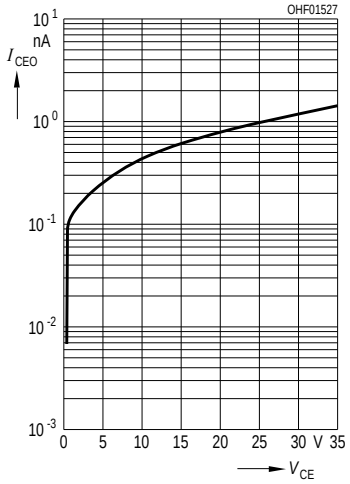
Rel. spectral sensitivity
$S_{rel} = f(\lambda)$



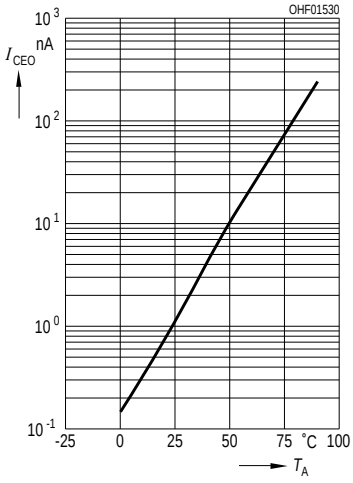
Photocurrent
$I_{PCE} = f(V_{CE})$, E_e = Parameter



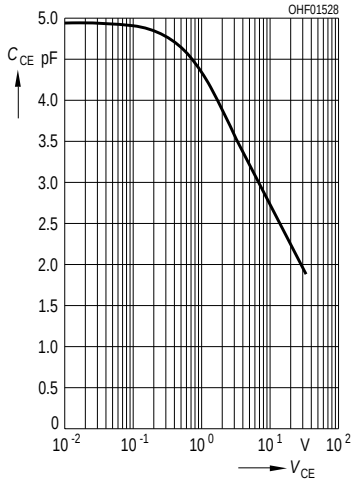
Dark current
$I_{CEO} = f(V_{CE})$, $E = 0$



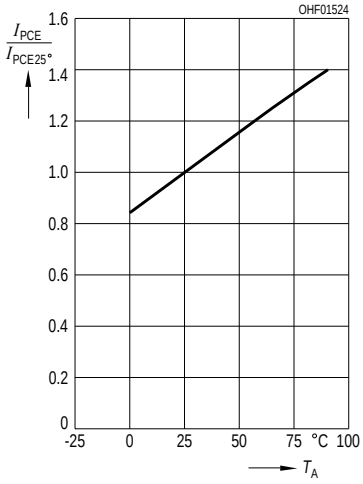
Dark current
$I_{CEO} = f(T_A)$, V_{CE} = 5 V, $E = 0$



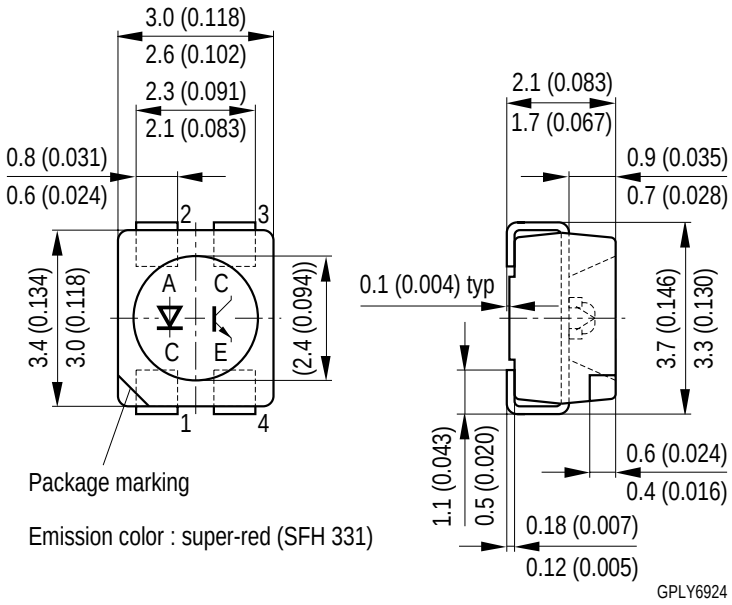
Capacitance
$C_{CE} = f(V_{CE})$, f = 1 MHz, $E = 0$



Photocurrent
$I_{PCE}/I_{PCE25°} = f(T_A)$, V_{CE} = 5 V



Maßzeichnung
Package Outlines



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

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