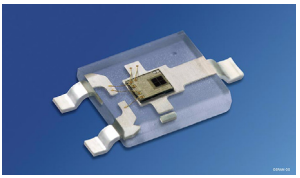
Logic Gate Detector
Lead (Pb) Free Product - RoHS Compliant

SFH 5400



Wesentliche Merkmale

- Geeignet für Anwendungen im Bereich von 500 nm bis 900 nm
- Fotodiode mit integriertem Schmitt-Trigger
- SMT-Bauform
- TTL- und CMOS-kompatibel
- Ausgang: push-pull

Anwendungen

- Optischer Schalter
- Lichtschranken
- Pulsformer
- Zähler

Features

- Suitable for applications from 500 nm to 900 nm
- Photodiode with built-in Schmitt trigger
- SMT package
- TTL and CMOS compatible
- Output: push-pull

Applications

- Optoelectronic switch
- Interrupter
- Pulse former
- Photoelectric counter

Typ Type	Bestellnummer Ordering Code
SFH 5400	Q65110A2704

Grenzwerte
Maximum Ratings

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Betriebs- und Lagertemperatur Operating and storage temperature range	T_{op}; T_{stg}	– 40 … + 85	°C
Versorgungsspannung Supply voltage	V_{CC}	– 0.5 … 15	V
Ausgangsspannung Output voltage	V_O	– 0.5 … 15	V
Ausgangsstrom Output current	I_q	– 25 … 40	mA
Ausgangsleistung T_A = 25 °C Total output power	P_q	100	mW

Kennwerte
Characteristics
T_A = – 40 … 85 °C, V_{CC} = 4.5 … 15 V, E_e = 3.2 … 10 mW/cm²
T_A = 25 °C, V_{CC} = 5 V, E_e = 6.5 mW/cm² for typical values

Bezeichnung Parameter	Symbol Symbol	Wert Value		Einheit Unit
		typ.	Limit	
Schwelle Bestrahlungsstärke Threshold radiant intensity (Ausgang L → H) (Output L → H) λ = 660 nm	E_{eSchw}	1.3	–	mW/cm²
Min. Bestrahlungsstärke, Ausgang H Min. radiant intensity, Output H λ = 660 nm	E_{eHmin}	–	< 3.2	mW/cm²
Max. Bestrahlungsstärke, Ausgang L Max. radiant intensity, Output L λ = 660 nm	E_{eLmax}	–	> 0.16	mWcm²
Hysterese Hysteresis	ΔE_e	> 0.2	–	mW/cm²
Ausgangsspannung L Output voltage L I_{OL} = 6.4 mA	V_{OL}	0.15	< 0.5	V

Kennwerte
Characteristics (cont'd)
T_A = – 40 … 85 °C, V_{CC} = 4.5 … 15 V, E_e = 3.2 … 10 mW/cm^2
T_A = 25 °C, V_{CC} = 5 V, E_e = 6.5 mW/cm^2 for typical values

Bezeichnung Parameter	Symbol Symbol	Wert Value		Einheit Unit
		typ.	Limit	
Ausgangsspannung H Output voltage H I_{OH} = – 2.6 mA	V_{OH}	V_{CC} – 1.8	> 2.4	V
Ausgangsleckstrom (V_O > V_{CC} = 4.5 V) Output leakage current (V_O > V_{CC} = 4.5 V) V_O = 5.5 V V_O = 15 V	I_{OHH}	 0.2 0.25	 < 100 < 500	µA
Kurzschlußstrom L Short-circuit current L t_p < 10 ms, E_e = 0; V_{CC} = V_O = 5.5 V V_{CC} = V_O = 15 V	I_{OSL}	 40 80	 > 25 > 40	mA
Kurzschlußstrom H Short-circuit current H t_p < 10 ms, V_0 = GND; V_{CC} = 5.5 V V_{CC} = 15 V	I_{OSH}	 – 22 – 45	 < – 10 < – 25	mA
Versorgungsstrom L Supply current L E_e = 0; V_{CC} = 5.5 V V_{CC} = 15 V	I_{CCL}	 3.5 4	 < 6 < 7.5	mA
Versorgungsstrom Supply current L V_{CC} = 5.5 V V_{CC} = 15 V	I_{CCH}	 3.4 3.8	 < 5 < 6	mA
Ausgangsverzögerungszeit[1)] Ausgang H → L Output delay time[1)] Output H → L	t_{PHL}	200	–	ns
Ausgangsverzögerungszeit[1)] Ausgang L → H Output delay time[1)] Output L → H	t_{PLH}	200	–	ns

Kennwerte
Characteristics (cont'd)
T_A = – 40 … 85 °C, V_{CC} = 4.5 … 15 V, E_e = 3.2 … 10 mW/cm^2
T_A = 25 °C, V_{CC} = 5 V, E_e = 6.5 mW/cm^2 for typical values

Bezeichnung Parameter	Symbol Symbol	Wert Value		Einheit Unit
		typ.	Limit	
Anstiegszeit Ausgang (10% → 90%) Rise time output (10% → 90%)	t_r	30	–	ns
Abfallzeit Ausgang (90% → 10%) Fall time output (90% → 10%)	t_f	10	–	ns

[1] Gemessen von 50% Punkt der ansteigenden Flanke Eingangspuls bis zu 1,3 V Punkt der ansteigenden Flanke Ausgangspuls (t_{PLH}), bzw. von 50% Punkt der abfallenden Flanke Eingangspuls bis zu 1,3 V Punkt der abfallenden Flanke Ausgangspuls (t_{PHL}).

[1] Measured from 50% of the rising edge of the input pulse to 1.3 V of the rising edge of the output pulse (t_{PLH}) or from 50% of the descending edge input pulse to 1.3 V of the descending output pulse edge (t_{PHL}), respectively.

Funktionsbereich
Functional Characteristics

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Betriebs- und Lagertemperatur Operating and storage temperature range	T_{op}; T_{stg}	– 40 … + 85	°C
Versorgungsspannung Supply voltage	V_{CC}	4.5 … 15	V

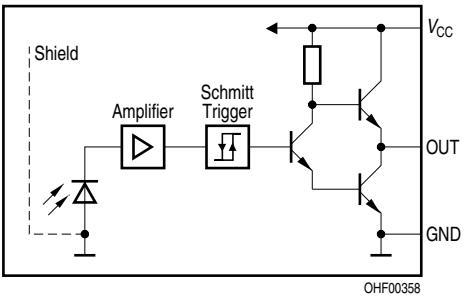
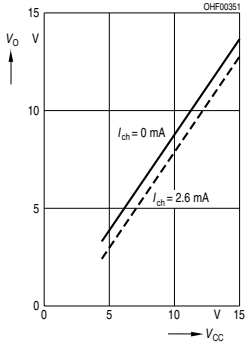


Figure 1 **Block Diagram**

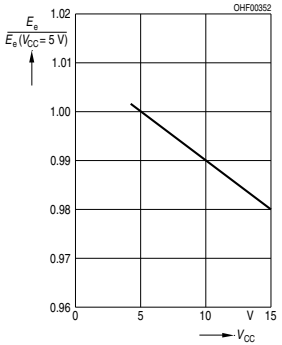
Output Voltage

$V_O = f(V_{CC}, I_C)$

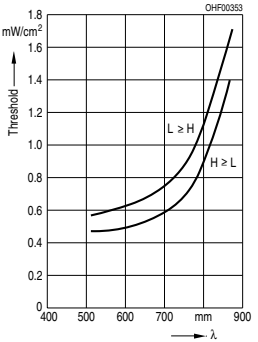


Rel. Threshold

$E_e/E_e(V_{CC} = 5\ V)$

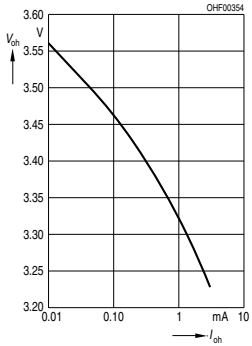


Switching Threshold

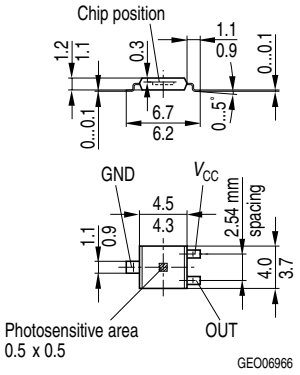


Output Characteristics

$V_{oh} = f(I_{oh})$, V_{CC} = 5 V

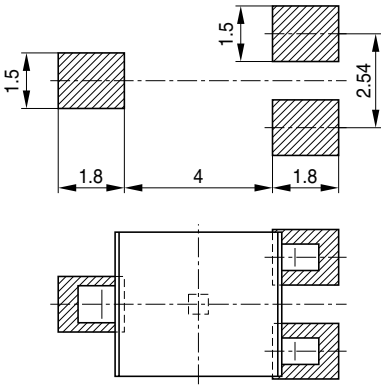


Maßzeichnung
Package Outlines



Maße in mm, wenn nicht anders angegeben / Dimensions in mm, unless otherwise specified.

Empfohlenes Lötpaddesign
Recommended Solderpad Design



Padgeometrie für
verbesserte Wärmeableitung

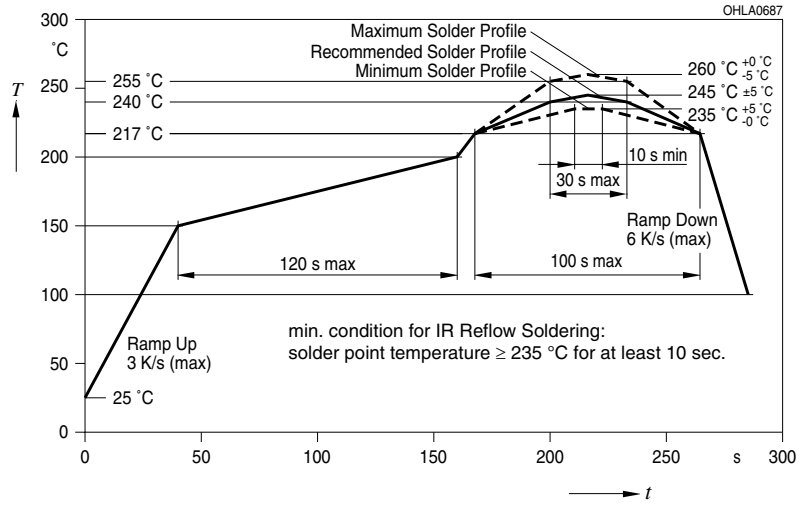
Paddesign for improved
heat dissipation

Bauteil positioniert
Component location on pad

OHF02528

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

Vorbehandlung nach JEDEC Level 2
Preconditioning acc. to JEDEC Level 2
(nach J-STD-020B)
(acc. to J-STD-020B)



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Components used in life-support devices or systems must be expressly authorized for such purpose! Critical components [1] , may only be used in life-support devices or systems [2] with the express written approval of OSRAM OS.

[1] A critical component is a component usedin 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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