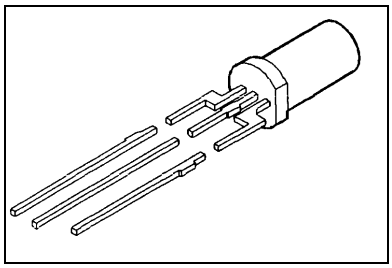
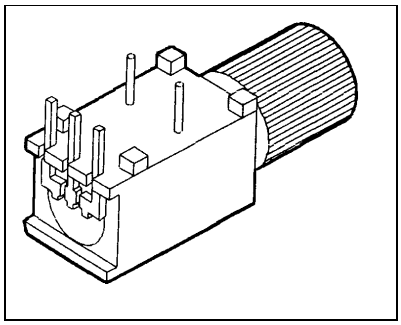
Integrated Photo Detector Receiver for Plastic Fiber
Plastic Connector Housing

Preliminary Data



Features

- Bipolar IC with open-collector output
- Digital output, TTL compatible
- Sensitive in visible and near IR range
- Low switching threshold
- Transfer rate ≤5 Mbitls
- 2,2 mm aperture holds standard 1000 micron plastic fiber
- No fiber stripping required
- Molded microlens for efficient coupling



Plastic Connector Housing

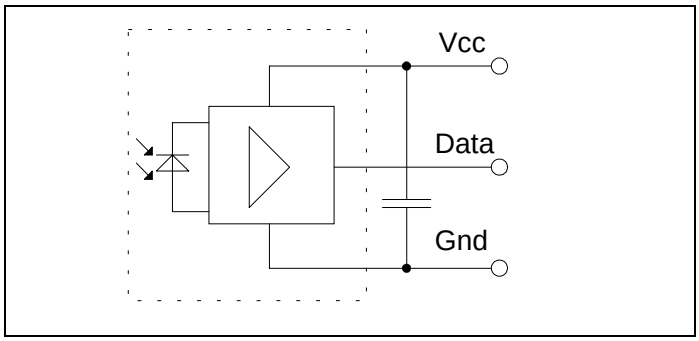
- Mounting screw attached to the connector
- Interference-free transmission from light-tight housing
- Transmitter and receiver can be flexibly positioned
- No cross talk
- Auto insertable and wave solderable
- Supplied in tubes

Applications

- Household electronics
- Power electronics
- Optical networks
- Medical instruments
- Automotive electronics

Type	Ordering Code
SFH 551/1-1	Q62702P3180
SFH 551/1-2	Q62702P3218
SFH 551/1-1V	Q62702P3181
SFH 551/1-2V	Q62702P3219

Block Diagram



A bypass capacitor (100nF) near the device (distance≤3cm) is necessary between ground and V_{CC}.

Description

The SFH551/1V is a transimpedance amplifier with digital TTL open collector output stage and integrated photodiode. The active area of the detector in connection with the molded microlens gives an efficient coupling from the end of a plastic fiber.
The receiver is fully DC coupled and therefore no line code is needed.
The SFH551/1V includes a Schmitt trigger function to provide stable output states over the whole dynamic range. With noise free Vcc and GND no undefined output signal is possible
SFH551/1 must not be used without shielding the ambient light, because ambient light causes malfunction when reaching the threshold level, noise or complete switching the output. Interference free transmission is possible by using the SFH551/1V with the black plastic connector housing.

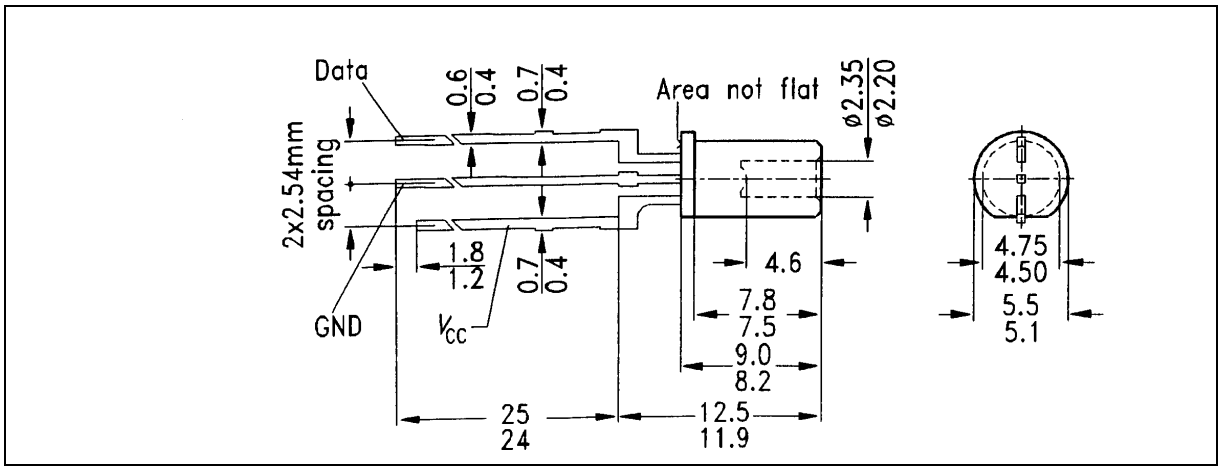
Maximum Ratings

Parameter	Symbol	Values	Unit
Operating Temperature Range	T_{OP}	-40 to +85	°C
Storage Temperature Range	T_{STG}	-55 to +100	°C
Soldering Temperature (2mm from case bottom t≤5s)	T_S	260	°C
Supply Voltage Range without Damage	V_{CC}	-0,5 to 15	V
Minimum Supply Voltage for Function	V_{CCmin}	4	V
Minimum Pullup Resistance (V_{CC} =5V)	R_{outmin}	330	Ω
Output Voltage	V_0	-0,5 to 15	V
Output Current	I_0	50	mA
Power Dissipation (output)	P_0	100	mW

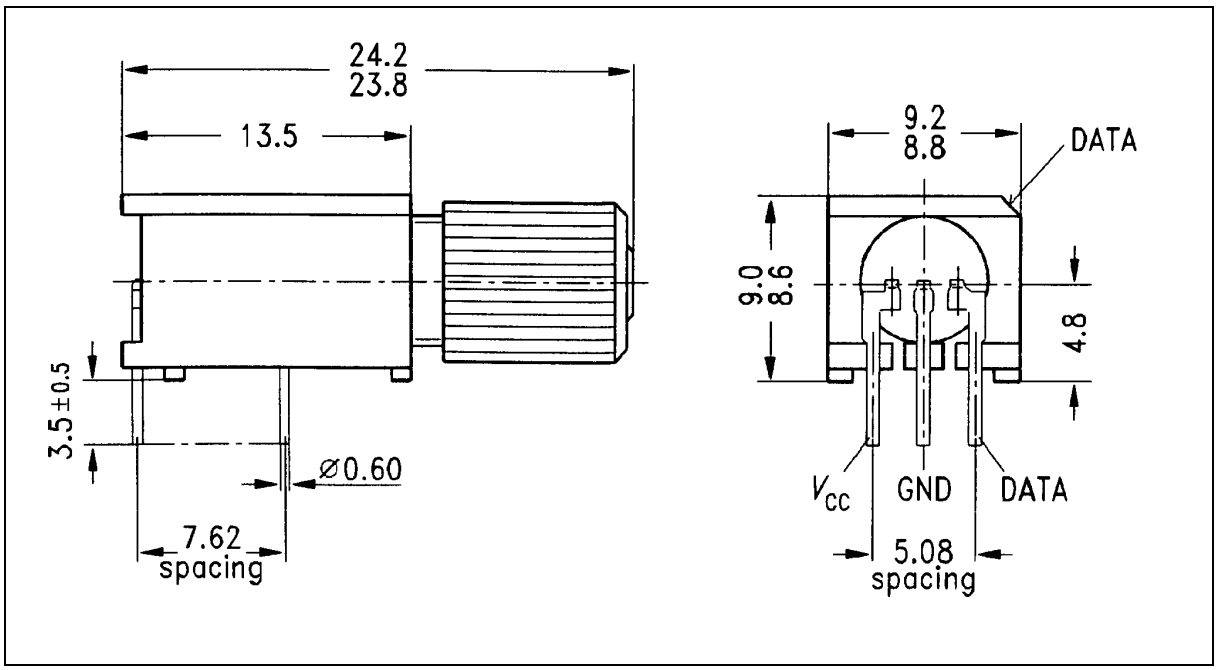
Characteristics (T_A = 25°C, V_{CC} = 4,75 to 5,25 V)

Parameter	Symbol	Values	Unit
Maximum Photosensitivity Wavelength	λ_{Smax}	700	nm
Photosensitivity Spectral Range (S=80% S_{max})	λ	600 to 780	nm
SFH 551/1-1 Optical threshold power (λ =660nm)	Φ_{INth}	≤ 6 ≤ - 22	µW dBm
SFH 551/1-2 Optical threshold power (λ =660nm)	Φ_{INth}	≤ 10 ≤ -20	µW dBm
Maximum optical power (λ=660nm) maximum value of tpLH at maximum power !	Φ_{INL}	1000 0	µW dBm
Optical power for output high without errors (λ=660nm)	Φ_{INH}	≤0,1 ≤ -40	µW dBm
Propagation delay (optical input to electrical output, with fast optical pulse)	t_{PHL} t_{PLH}	< 100 < 250	ns ns
Current Consumption (without output current)	Icc	4	mA

Packages Outlines (dimensions in mm, unless otherwise specified)



SFH 551/1



SFH 551/1V