

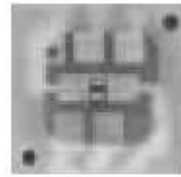
### General Description

Optical device consisting of one silicon NPN phototransistor chip with high gain uniformity for the output signal.

The active area of the silicon die is 0.2 x 0.45 mm<sup>2</sup>.

The high optical responsivity is due to the antireflective coating deposited on the phototransistor active area.

The package type is intended for direct mounting on ceramic or PC boards by manual soldering or SMT.



### Applications

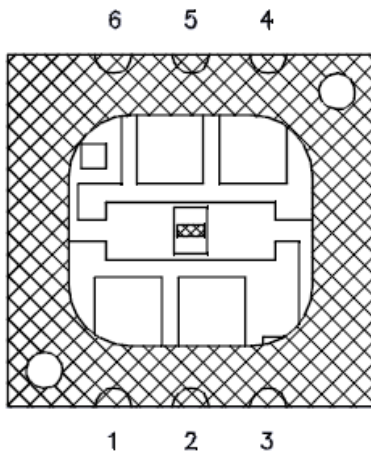
Optical Sensors  
General Purpose

### Features

- High Gain Uniformity ±10%
- High Reliability
- Very High Output Signal
- Available in SMT Suitable Version

### Pin Functions

No.	Name	Function
1	EE	Phototransistor Emitter
2		N.C.
3	CA	Phototransistor Collector
4		N.C.
5		N.C.
6	CB	Phototransistor Collector



### Ordering Information

OIT20S01	1 Silicon NPN Phototransistor Chip with Active Area of the Silicon Die 0.2 x 0.45 mm <sup>2</sup> .
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**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Min	Max	Unit
T <sub>A</sub>	Operating Temperature Range	-40	100	°C
T <sub>S</sub>	Storage Temperature	-40	100	°C
T <sub>Sol</sub>	Lead Temperature (solder) 3s		230	°C
V <sub>R(BR)</sub>	Breakdown Voltage Collector-Emitter @ T <sub>A</sub> =25°C I <sub>B</sub> =100nA I <sub>C</sub> =1mA	50		V
P <sub>D</sub>	Power Dissipation @ T <sub>A</sub> =25°C		150	mW

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rated conditions for extended periods may affect device reliability.

**ELECTRICAL CHARACTERISTICS**

T<sub>A</sub> = 25°C unless otherwise noted.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I <sub>D</sub>	Dark Current	V <sub>R</sub> =10V		10	100	nA
R <sub>λ</sub>	Responsivity	V <sub>CE</sub> =5V λ=880nm	0.5			A/W
λ <sub>p</sub>	Peak Responsivity	V <sub>CE</sub> =5V		900		nm
Δλ	Spectral Bandwidth @ 50%	V <sub>CE</sub> =5V	600		1000	nm
I <sub>ec0</sub>	Emitter-Collector Current	V <sub>CE</sub> =7.7V		0.1	100	μA
I <sub>ce0</sub>	Collector-Emitter Current	V <sub>CE</sub> =52V		0.1	100	μA
H <sub>FE</sub>	Gain	V <sub>CC</sub> =5V I <sub>C</sub> =2mA		550		
V <sub>CE(sat)</sub>	Saturation Voltage	I <sub>E</sub> =2mA I <sub>B</sub> =20μA		160	200	mV
I <sub>C(on)</sub>	On-state Collector Current	V <sub>CE</sub> =5V E <sub>E</sub> =1.0mW/cm <sup>2</sup>		1		mA

**AC SWITCHING CHARACTERISTICS**

T<sub>A</sub> = 25°C unless otherwise noted.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
t <sub>R</sub>	Rise Time	V <sub>CC</sub> =5V I <sub>C</sub> =1mA R <sub>1</sub> =1kΩ		10		μs
t <sub>F</sub>	Fall Time	V <sub>CC</sub> =5V I <sub>C</sub> =1mA R <sub>1</sub> =1kΩ		11		μs

**MECHANICAL CHARACTERISTICS**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
A	Phototransistor Active Area			0.09		mm <sup>2</sup>
L	Length of the Active Area			0.2		mm
W	Width of the Active Area			0.45		mm

**MECHANICAL DIMENSIONS**

Units=mm Mechanical tolerance=+/-0.2mm Die positioning tolerance=+/-0.030mm

