Silicon Phototransistor
OP570 Series

Features:
- SMD plastic package
- High photo sensitivity
- Fast response time
- Choice of four lead configurations
- IR transmissive plastic package

Description:
Each device in this series is an NPN silicon phototransistor mounted in an opaque plastic SMD package, with an integral molded lens that enables a narrow acceptance angle and a higher collector current than devices without a lense.

The **OP570** series has four lead configurations and is compatible with most automated mounting equipment. *The OP570 series is mechanically and spectrally matched to the OP270 series infrared LEDs.*

*Please refer to Application Bulletins 208 and 210 for additional design information and reliability (degradation) data.*

Applications:
- Non-contact position sensing
- Datum detection
- Machine automation
- Optical encoders
- IrDA
- Reflective and transmissive sensors

<table>
<thead>
<tr>
<th>Ordering Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part Number</td>
</tr>
<tr>
<td>---------------</td>
</tr>
<tr>
<td>OP570</td>
</tr>
<tr>
<td>OP571</td>
</tr>
<tr>
<td>OP572</td>
</tr>
<tr>
<td>OP573</td>
</tr>
</tbody>
</table>

Pin # | Transistor  
--- | -----------  
1 | Collector   
2 | Emitter    

OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.
Silicon Phototransistor
OP570 Series

OP573

OP570

OP571

OP572

TOLERANCE IS ± .0039 [0.1] INCHES

DIMENSIONS ARE IN:
MILLIMETERS

Pin # | Transistor
---|---
1 | Collector
2 | Emitter

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OP570 Series

Absolute Maximum Ratings \((T_A=25^\circ C\) unless otherwise noted\)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage Temperature Range</td>
<td>°C</td>
<td>-40</td>
<td>25</td>
<td>+85</td>
<td></td>
</tr>
<tr>
<td>Operating Temperature Range</td>
<td>°C</td>
<td>-25</td>
<td>25</td>
<td>+85</td>
<td></td>
</tr>
<tr>
<td>Collector-Emitter Voltage</td>
<td>V</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emitter-Collector Voltage</td>
<td>V</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collector Current</td>
<td>mA</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 seconds with soldering iron]</td>
<td>°C</td>
<td>260</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Dissipation</td>
<td>mW</td>
<td>130</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1. Solder time less than 5 seconds at temperature extreme.
2. Derate linearly at 2.17 mW/°C above 25°C.

Electrical Characteristics \((T_A=25^\circ C\) unless otherwise noted\)

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>PARAMETER</th>
<th>MIN</th>
<th>TYP</th>
<th>MAX</th>
<th>UNITS</th>
<th>TEST CONDITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>IC(ON)</td>
<td>On-State Collector Current</td>
<td>2.5</td>
<td>-</td>
<td>-</td>
<td>mA</td>
<td>(V_{CE}=5.0) V, (E_E=5.0) mW/cm² (E_e=5.0) mW/cm²</td>
</tr>
<tr>
<td>VCE(SAT)</td>
<td>Forward Voltage</td>
<td>-</td>
<td>-</td>
<td>0.4</td>
<td>V</td>
<td>(I_C=100) µA, (E_E=2.0) mW/cm²</td>
</tr>
<tr>
<td>ICEO</td>
<td>Reverse Current</td>
<td>-</td>
<td>-</td>
<td>100</td>
<td>nA</td>
<td>(V_{CE}=5.0) V, (E_E=0) mW/cm²</td>
</tr>
<tr>
<td>VBR(CEO)</td>
<td>Wavelength at Peak Emission</td>
<td>30</td>
<td>-</td>
<td>-</td>
<td>V</td>
<td>(I_C=100) µA</td>
</tr>
<tr>
<td>VBR(CEO)</td>
<td>Emission Angle at Half Power Points</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>V</td>
<td>(I_E=100) µA</td>
</tr>
</tbody>
</table>

Notes:
1. Light source is an unfiltered GaAl LED with a peak emission wavelength of 935nm and a radiometric intensity level which varies less than 10% over the entire lens surface of the phototransistor being tested.
2. To calculate typical collector dark current in µA, use the formula \(I_{CEO}=10^{(0.04 Ta-3.4)}\) where \(Ta\) is the ambient temperature in °C.

Relative On-State Collector Current vs. Irradiance

Relative On-State Collector Current vs. Temperature
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OP570 Series

Relative Collector Current vs. Ambient Temperature

Collector Current vs. Collector-Emitter Voltage

Collector Dark Current Vs. Ambient Temperature

Spectral Sensitivity vs. Wavelength

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