**Description**

The KPS-3227SP1C is a NPN silicon phototransistor, it is a good effective solution to the power saving of display backlighting appliances, and the device is sensitive to the visible spectrum.

**Features**

- Lead-free package.
- Component in accordance with RoHS.
- Adapted to human eye responsive.
- Wide angle of half sensitivity.
- Package: 2KPCS/Reel.

**Applications**

Detection of ambient light to control display backlighting in:

- mobile phones
- PDAs
- note books
- video cameras

**Note:**

1. Soldering time <= 5 seconds

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**Absolute Maximum Ratings (Ta=25°C)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Rating</th>
<th>Unit</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collector Emitter Voltage</td>
<td>Vceo</td>
<td>60</td>
<td>V</td>
<td>Iceo=100μA</td>
</tr>
<tr>
<td>Emitter Collector Voltage</td>
<td>Veco</td>
<td>4</td>
<td>V</td>
<td>Ieco=100μA</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>Topr</td>
<td>-40 to +85</td>
<td>°C</td>
<td>-</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>Tstg</td>
<td>-40 to +85</td>
<td>°C</td>
<td>-</td>
</tr>
<tr>
<td>Soldering Temperature</td>
<td>Tsol</td>
<td>260</td>
<td>°C</td>
<td>-</td>
</tr>
</tbody>
</table>

**UNIT:** MM [INCH]

**TOLERANCE:** ±0.1 [0.004] UNLESS OTHERWISE NOTED.
### *Electrical and Optical Characteristics (Ta=25°C)*

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Value</th>
<th>Unit</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collector Emitter Breakdown Voltage</td>
<td>BVceo</td>
<td>60</td>
<td>V</td>
<td>Iceo=100μA</td>
</tr>
<tr>
<td>Emitter Collector Breakdown Voltage</td>
<td>BVeco</td>
<td>4</td>
<td>V</td>
<td>Iceo=100μA</td>
</tr>
<tr>
<td>Collector dark current</td>
<td>I0</td>
<td>-</td>
<td>-</td>
<td>VCE=5V, EV=0Lux</td>
</tr>
<tr>
<td>Angle of half sensitivity</td>
<td></td>
<td>201/2</td>
<td>120</td>
<td>°</td>
</tr>
<tr>
<td>Light Current(1)</td>
<td>lPH1</td>
<td>-</td>
<td>6</td>
<td>μA</td>
</tr>
<tr>
<td>Light Current(2)</td>
<td>lPH2</td>
<td>-</td>
<td>130</td>
<td>μA</td>
</tr>
<tr>
<td>Light Current(3)</td>
<td>lPH3</td>
<td>-</td>
<td>950</td>
<td>μA</td>
</tr>
<tr>
<td>Light Current(4)</td>
<td>lPH4</td>
<td>-</td>
<td>420</td>
<td>μA</td>
</tr>
<tr>
<td>Saturation Output Voltage</td>
<td>Vo</td>
<td>4.5</td>
<td>4.7</td>
<td>V</td>
</tr>
<tr>
<td>Peak Wavelength</td>
<td>λP</td>
<td>-</td>
<td>580</td>
<td>nm</td>
</tr>
<tr>
<td>Response Wavelength</td>
<td>λ</td>
<td>390</td>
<td>700</td>
<td>nm</td>
</tr>
<tr>
<td>Collector Emitter Saturation Voltage</td>
<td>VCE(sat)</td>
<td>-</td>
<td>0.4 V</td>
<td>IC=10 mA</td>
</tr>
</tbody>
</table>

**Notes:**
1. White Fluorescent light (Color Temperature = 6200K) is used as light source.
2. Illuminance by CIE standard illuminant-A/2856K, incandescent lamp.
3. Sunlight (Color Temperature = 4600K) is used as light source.

**Fig.1** Illuminance vs. Output Phiecurrent

**Fig.2** Relative Spectral Responsivity vs. Wavelength

**Fig.3** Relative radiant sensitivity vs. Angular displacement
Converting Photocurrent to Voltage

Notes:
1. The output voltage ($V_{out}$) is the product of photocurrent ($I_{ph}$) and loading resistor ($R_L$).
2. A right loading resistor shall be chosen to meet the requirement of maximum ambient light, and output saturation voltage:

$$V_{out}(max) = I_{out}(max) \times R_L \leq V_{out}(saturation) = V_{cc} = 0.3V$$

Tape Specifications
(Units : mm)

1.3 Collector
2.4 Emitter
PACKING & LABEL SPECIFICATIONS

KPS-3227SP1C

USER DIRECTION OF FEED

LABEL

2,000 pcs / Reel

1 Reel / Bag

OUTSIDE LABEL

Kingbright

OUTSIDE LABEL

60K / 56# BOX

30K / 55# Box

P/N: KPS-3227xxx

QTY: 2,000 pcs

S/N: XXXX

CODE: XXX

LOT NO:

RoHS Compliant

Kingbright

SPEC NO: DSAG5419
REV NO: V.8
DATE: NOV/12/2009
PAGE: 4 OF 4
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