**Visible Light Sensors**

**Visible Light Sensor Selection Guide**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
<th>Useful Light Range (Lux)</th>
<th>Light Output Function</th>
<th>Output Topology</th>
<th>Input Supply Range</th>
<th>Output Current @ 100 Lux</th>
<th>Properties / Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>LX1977</td>
<td>MSOP-8 (Lens)</td>
<td>0 - 500</td>
<td>Linear</td>
<td>Serial data stream using I2C compatible SMBus interface. Programmable Interrupt pin support.</td>
<td>3.0V - 4.5V</td>
<td>N/A</td>
<td>High precision in low lighting. Includes Best Eye™ for superior IR and UV immunity, 60% dark current reduction over the LX1973A.</td>
</tr>
<tr>
<td>LX1973B</td>
<td>MSOP-8</td>
<td>.005 - 400</td>
<td>Quarter Root</td>
<td>Current Source vs. Light</td>
<td>4.5V - 5.5V</td>
<td>410μA</td>
<td>High precision in low lighting. Includes Best Eye™ for superior IR and UV immunity.</td>
</tr>
<tr>
<td>LX1973A</td>
<td>MSOP-8</td>
<td>.01 - 500</td>
<td>Quarter Root</td>
<td>Current Source vs. Light</td>
<td>4.5V - 5.5V</td>
<td>360μA</td>
<td>High precision in ultra low lighting conditions. Internal dark current cancellation.</td>
</tr>
<tr>
<td>LX1973</td>
<td>MSOP-8</td>
<td>.01 - 500</td>
<td>Quarter Root</td>
<td>Current Source vs. Light</td>
<td>4.5V - 5.5V</td>
<td>380μA</td>
<td>High precision in ultra low lighting conditions. Internal dark current cancellation.</td>
</tr>
<tr>
<td>LX1972A</td>
<td>1206</td>
<td>&lt; 1 - 5K</td>
<td>Linear</td>
<td>Two Terminal Current Source vs. Light</td>
<td>2V - 5.5V</td>
<td>~10μA</td>
<td>Patented Best Eye™ technology provides near perfect immunity to non visible light spectra. Applications demanding superior IR and UV immunity.</td>
</tr>
<tr>
<td>LX1974</td>
<td>1206</td>
<td>&lt; 1 - 5K</td>
<td>Linear</td>
<td>Two Terminal Current Source vs. Light</td>
<td>2V - 5.5V</td>
<td>~10μA</td>
<td>Same as LX1972, but with tape-and-reel orientation for bottom light applications.</td>
</tr>
<tr>
<td>LX1972</td>
<td>1206</td>
<td>&lt; 1 - 5K</td>
<td>Linear</td>
<td>Two Terminal Current Source vs. Light</td>
<td>2V - 5.5V</td>
<td>~10μA</td>
<td>Low cost, small size, high performance general purpose “human eye” response sensor. Packaged for top light applications.</td>
</tr>
<tr>
<td>LX1971</td>
<td>MSOP-8</td>
<td>&lt; 1 - 15K</td>
<td>Square Root</td>
<td>Current Sink and Current Source vs. Light</td>
<td>3V - 5.5V</td>
<td>~10μA</td>
<td>Wide dynamic range with extreme sensitivity at low ambient light conditions.</td>
</tr>
<tr>
<td>LX1970</td>
<td>MSOP-8</td>
<td>&lt; 1 - 1.2K</td>
<td>Linear</td>
<td>Current Sink and Current Source vs. Light</td>
<td>2V - 5.5V</td>
<td>~38μA</td>
<td>General purpose sensor for illumination and display control applications.</td>
</tr>
</tbody>
</table>

**LX1980™ RGB Light Sensor**

The LX1980 combines three sensors (red, green, blue) in a single IC and offers superior spectral response. It is optimized for RGB LCD backlighting and color sensing systems.

**Key Features**

- Well shaped spectral response
- Highly accurate & repeatable output voltage vs. input irradiance
- Temperature stable
- Integrated high gain amplifiers
- Adjustable output to input gain
Visible Light Sensors

LX1977

- Ideal for TVs to improve efficiency and provide Energy Star compliance
- Ideal for notebooks to extend battery life
- Superior performance
- Flexible and easy to use
  - BiC accuracy improves manufacturability and reduces cost
  - Stability over wide temperature range and supply
  - Low IR sensitivity for consistent operation and reduced service costs
  - User settable Integration time for optimal performance/application
  - Wide supply and temp range support
  - Programmable integration time
  - Programmable Interrupt
  - SMBUS interfacing

Applications
- Outdoor lighting control
- Automotive lighting control - headlamp, mirrors, displays
- Indoor lighting control for architecture, lighting, appliances
- Consumer electronic displays
- LCD-TV
- Digital cameras

Key Features
- Ideal for TVs to improve efficiency and provide Energy Star compliance
- Ideal for notebooks to extend battery life
- 25C Dark Current < 0.005 lux
- 5 decades compressed output
- 10% accuracy over temperature
- Scalable output voltage
- No optical filters needed
The LX1972 and the LX1972A are low cost silicon light sensors with spectral response that closely emulates the human eye.

The LX1972A provides improved spectral response using Microsemi's BestEye™ technology.

Patented circuitry produces peak spectral response at 520nm, with IR response less than ±5% of the peak response, about 900nm.

The photo sensor is a pin diode array with a linear, accurate, and very repeatable current transfer function.

High gain current mirrors on the chips multiply the PIN diode photo-current to a sensitivity level that can be voltage scaled with a standard value external resistor. Output current from these simple to use two-pin devices can be used directly or converted to a voltage by placing it in series with a single resistor at either of its two pins.

Internal temperature compensation allows dark current to be kept below 200nA over the full specification temperature range (-40°C to +85°C) providing high accuracy at low light levels. Usable ambient light conditions range is from 1 lux to more than 5000 lux.

The LX1972 and LX1972A are optimized for controlling back lighting systems in low cost consumer products such as LCD TV, portable computers, and digital cameras.

Key Features
- Near Human Eye spectral response - LX1972
- Nearly perfect Best Eye™ human eye spectral response - LX1972A
- Very Low IR sensitivity
- Highly accurate & repeatable Output Current vs. Light
- Scalable output voltage
- Temperature stable
- Integrated high gain photo current amplifiers
- No optical filters needed
- Tiny 1206 package
- RoHS Compliant / Pb-free applications
- Portable electronic displays
- LCD TV backlight systems
- Digital still cameras (DCS)
- Desktop monitors
- Notebook computers