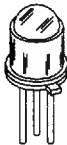


## Sensors Hermetic Optoschmitts

Hermetically sealed optoschmitts are available in TO-18 and TO-46 metal-can packages, with different pinouts. They are graded on input sensitivity with radiant intensity maximum ranging from 2.5 mW/cm<sup>2</sup> (SD5600-001, SD5620-001) to 0.13mW/cm<sup>2</sup> (SDXX4-003). The devices are tested using a monochromatic IRED operating at 935nm.

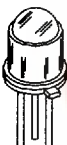
These devices consist of a photodiode, linear amplifier, Schmitt trigger, and an output stage. Device polarity is determined in the output stage. For that reason, all electrical specifications are listed together and followed by an output cross-reference to allow proper choice for output configuration and polarity.

### SD5004, SD5014, SD5304, SD5314, SD5604 and SD5614

| Package Style                                                                     | Parameter                 | min. | max. | units              | Test Conditions                                                           |
|-----------------------------------------------------------------------------------|---------------------------|------|------|--------------------|---------------------------------------------------------------------------|
|  | Supply Voltage            | 4.5  | 16.0 | V                  | SD5304, 5314, 5604 and 5614                                               |
|                                                                                   |                           | 4.5  | 7.0  | V                  | SD5004, 5014                                                              |
|                                                                                   | Supply Current            |      | 15.0 | mA                 | V <sub>CC</sub> = 16V, H = 0 to 10 mW/cm <sup>2</sup>                     |
|                                                                                   | Output Saturation Voltage |      | 0.4  | V                  | I <sub>OL</sub> = 12.8mA, V <sub>CC</sub> = 5.5V                          |
|                                                                                   | Radiant Threshold         |      |      |                    |                                                                           |
|                                                                                   | -301                      |      | 1.50 | mW/cm <sup>2</sup> | V <sub>CC</sub> = 5.0V                                                    |
|                                                                                   | -302                      |      | 0.25 | mW/cm <sup>2</sup> | V <sub>CC</sub> = 5.0V                                                    |
|                                                                                   | -303                      |      | 0.13 | mW/cm <sup>2</sup> | V <sub>CC</sub> = 5.0V                                                    |
|                                                                                   | Hysteresis (Note 1)       | 33   | 67   | %                  | V <sub>CC</sub> = 5.0V                                                    |
|                                                                                   | Propagation Delay         |      |      |                    |                                                                           |
|                                                                                   | LO to HI, HI to LO        |      | 5.0  | μs                 | V <sub>CC</sub> = 5.0V, R <sub>L</sub> = 390Ω<br>(totem-pole, 8TTL loads) |
|                                                                                   | Rise Time                 |      | 70   | ns                 | same as propagation delay                                                 |
|                                                                                   | Fall Time                 |      | 70   | ns                 | same as propagation delay                                                 |

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### SD5600, SD5610, SD5620 and SD5630

| Package Style                                                                       | Parameter                 | min. | max.  | units              | Test Conditions                                   |
|-------------------------------------------------------------------------------------|---------------------------|------|-------|--------------------|---------------------------------------------------|
|  | Supply Voltage            | 4.5  | 16.0  | V                  |                                                   |
|                                                                                     | Supply Current            |      | 12.0  | mA                 | V <sub>CC</sub> = 5.0V, H = 0                     |
|                                                                                     | Supply Current            |      | 15.0  | mA                 | V <sub>CC</sub> = 16.0V, H = 0                    |
|                                                                                     | Output Saturation Voltage |      | 0.4   | V                  | I <sub>OL</sub> = 12.8 mA, V <sub>CC</sub> = 5.0V |
|                                                                                     | Radiation Threshold       |      |       |                    |                                                   |
|                                                                                     | SD5600-1, SD5610-1        |      | 2.5   | mW/cm <sup>2</sup> | V <sub>CC</sub> = 5.0V                            |
|                                                                                     | SD5620-1, SD5630-1        |      | 0.25  | mW/cm <sup>2</sup> | V <sub>CC</sub> = 5.0V                            |
|                                                                                     | SD5620-2, SD5630-2        |      | 0.13  | mW/cm <sup>2</sup> | V <sub>CC</sub> = 5.0V                            |
|                                                                                     | Hysteresis (Note 1)       | 5.0  | 30.0  | %                  | V <sub>CC</sub> = 5.0                             |
|                                                                                     | Propagation Delay         |      |       |                    |                                                   |
|                                                                                     | LO to HI, HI to LO        |      | 5.0   | μs                 | R <sub>L</sub> = 390Ω, C <sub>L</sub> = 50pf      |
|                                                                                     | Rise Time                 |      | 150.0 | ns                 | same as propagation delay                         |
|                                                                                     | Fall Time                 |      | 15.0  | ns                 | same as propagation delay                         |

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### OUTPUT CROSS REFERENCE

| Part Number(s)     | Polarity | Output Definition | Output Type                     |
|--------------------|----------|-------------------|---------------------------------|
| SD5004             | buffer   | LO with H = 0     | totem-pole                      |
| SD5014             | inverter | HI with H = 0     | totem-pole                      |
| SD5304             | buffer   | LO with H = 0     | open-collector                  |
| SD5314             | inverter | HI with H = 0     | open-collector                  |
| SD5604, 5600, 5620 | buffer   | LO with H = 0     | 10KΩ pull-up to V <sub>CC</sub> |
| SD5614, 5610, 5630 | inverter | HI with H = 0     | 10KΩ pull-up to V <sub>CC</sub> |

NOTE 1: Hysteresis is defined as the difference between the operating and release threshold intensities, expressed as a percentage of the operate threshold intensity.

## Plastic Encapsulated Optoschmitts Sensors

Plastic encapsulated optoschmitts are available in two side-looking packages; pinouts are identical, but lead spacing and forming are different. They are graded on input sensitivity with radiant intensity maximum ranging from 2.5 mW/cm<sup>2</sup> to 0.37mW/cm<sup>2</sup>. The devices are tested using a monochromatic IRED operating at 935nm.

These devices consist of a photodiode, linear amplifier, Schmitt trigger, and an output stage. Device polarity is determined in the output stage. For that reason, all electrical specifications are listed together and followed by an output cross-reference to allow proper choice for output configuration and polarity.

### SDP8004, SDP8014, SDP8304, SDP8314, SDP8604, and SDP8614

| Package Style                                                                      | Parameter                 | min. | max. | units              | Test Conditions                                                        |
|------------------------------------------------------------------------------------|---------------------------|------|------|--------------------|------------------------------------------------------------------------|
|  | Supply Voltage            | 4.5  | 5.5  | V                  | SDP8004, SDP8014                                                       |
|                                                                                    | Supply Voltage            | 4.5  | 16.0 | V                  | SDP8304, 8314, 8604, 8614                                              |
|                                                                                    | Supply Current            |      | 15.0 | mA                 | V <sub>CC</sub> = 16V, H = 0 to 10mW/cm <sup>2</sup>                   |
|                                                                                    | Output Saturation Voltage |      | 0.4  | V                  | I <sub>OL</sub> = 12.8mA, V <sub>CC</sub> = 5.5V                       |
|                                                                                    | Radiant Threshold         |      |      |                    |                                                                        |
|                                                                                    | -301                      | .08  | .37  | mW/cm <sup>2</sup> | V <sub>CC</sub> = 5.0V                                                 |
|                                                                                    | Hysteresis (Note 1)       | 33   | 67   | %                  | V <sub>CC</sub> = 5.0V                                                 |
|                                                                                    | Propagation Delay         |      |      |                    |                                                                        |
|                                                                                    | LO to HI, HI to LO        |      | 5.0  | μs                 | V <sub>CC</sub> = 5.0V, R <sub>L</sub> = 390Ω (totem-pole, 8TTL loads) |
|                                                                                    | Rise Time                 |      | 70   | ns                 | same as propagation delay                                              |
| Drawing 28<br>Page 42                                                              | Fall Time                 |      | 70   | ns                 | same as propagation delay                                              |

### SDP8600, SDP8601, SDP8602, SDP8610, SDP8611, and SDP8612

| Package Style                                                                       | Parameter                 | min. | max.  | units              | Test Conditions                                  |
|-------------------------------------------------------------------------------------|---------------------------|------|-------|--------------------|--------------------------------------------------|
|  | Supply Voltage            | 4.5  | 16.0  | V                  |                                                  |
|                                                                                     | Supply Current            |      | 12.0  | mA                 | V <sub>CC</sub> = 5.0V, H = 0                    |
|                                                                                     | Supply Current            |      | 15.0  | mA                 | V <sub>CC</sub> = 16.0V, H = 0                   |
|                                                                                     | Output Saturation Voltage |      | 0.4   | V                  | I <sub>OL</sub> = 12.8mA, V <sub>CC</sub> = 5.0V |
|                                                                                     | Radiant Threshold         |      |       |                    |                                                  |
|                                                                                     | -1                        |      | 2.5   | mW/cm <sup>2</sup> | V <sub>CC</sub> = 5.0V                           |
|                                                                                     | -2                        |      | 1.2   | mW/cm <sup>2</sup> | V <sub>CC</sub> = 5.0V                           |
|                                                                                     | -3                        |      | 0.6   | mW/cm <sup>2</sup> | V <sub>CC</sub> = 5.0V                           |
|                                                                                     | Hysteresis (Note 1)       | 5.0  | 30.0  | %                  | V <sub>CC</sub> = 5.0V                           |
|                                                                                     | Propagation Delay         |      |       |                    |                                                  |
| Drawing 29<br>Page 42                                                               | LO to HI, HI to LO        |      | 5.0   | μs                 | R <sub>L</sub> = 390Ω, C <sub>L</sub> = 50pf     |
|                                                                                     | Rise Time                 |      | 150.0 | ns                 | same as propagation delay                        |
|                                                                                     | Fall Time                 |      | 15.0  | ns                 | same as propagation delay                        |

### OUTPUT CROSS REFERENCE

| Part Number(s)      | Polarity | Output Definition | Output Type                     |
|---------------------|----------|-------------------|---------------------------------|
| SDP8004             | buffer   | LO with H = 0     | totem-pole                      |
| SDP8014             | inverter | HI with H = 0     | totem-pole                      |
| SDP8304             | buffer   | LO with H = 0     | open-collector                  |
| SDP8314             | inverter | HI with H = 0     | open-collector                  |
| SDP8600, 8601, 8602 | buffer   | LO with H = 0     | 10KΩ pull-up to V <sub>CC</sub> |
| SDP8604             | buffer   | LO with H = 0     | 10KΩ pull-up to V <sub>CC</sub> |
| SDP8610, 8611, 8612 | inverter | HI with H = 0     | 10KΩ pull-up to V <sub>CC</sub> |
| SDP8614             | inverter | HI with H = 0     | 10KΩ pull-up to V <sub>CC</sub> |

**NOTE 1:** Hysteresis is defined as the difference between the operating and release threshold intensities, expressed as a percentage of the operate threshold intensity.