

TSL257

High-Sensitivity Light-to-Voltage Converter

General Description

The TSL257 is a high-sensitivity low-noise light-to-voltage optical converter that combines a photodiode and a transimpedance amplifier on a single monolithic CMOS integrated circuit. Output voltage is directly proportional to light intensity (irradiance) on the photodiode. The TSL257 has a transimpedance gain of 320M Ω . The device has improved offset voltage stability and low power consumption and is supplied in a 3-lead clear plastic sidelooker package with an integral lens. When supplied in the lead (Pb) free package, the device is RoHS compliant.

Ordering Information and Content Guide appear at end of datasheet.

Key Benefits & Features

The benefits and features of TSL257, High-Sensitivity Light-to-Voltage Converter are listed below:

Figure 1:
Added Value of Using TSL257

Benefits	Features
<ul style="list-style-type: none"> Enables Extremely Fast Response to Change 	<ul style="list-style-type: none"> Single Photo-Diode and Trans Impedance Architecture
<ul style="list-style-type: none"> Enables Fast Response to Visible Light in Range of 400nm to 700nm Wavelengths 	<ul style="list-style-type: none"> 160μs Output Rise-Time Response
<ul style="list-style-type: none"> Provides for High Sensitivity to Detect a Small Change in Light 	<ul style="list-style-type: none"> High Irradiance Responsivity: Typically 1.68V/(μW/cm²) at $\lambda_p = 645$nm
<ul style="list-style-type: none"> Provides Additional Sensitivity Advantages 	<ul style="list-style-type: none"> 2x Gain Lens
<ul style="list-style-type: none"> Provides Full Dynamic Range 	<ul style="list-style-type: none"> Rail-To-Rail Output Swing

- Converts Light Intensity to Output Voltage
- Monolithic Silicon IC Containing Photodiode, Operational Amplifier, and Feedback Components
- High Sensitivity
- Single Voltage Supply Operation (2.7V to 5.5V)
- Low Noise (200 μ Vrms Typ to 1kHz)
- High Power-Supply Rejection (35dB at 1kHz)
- Compact 3-Leaded Plastic Package
- RoHS Compliant (-LF Package Only)

Functional Block Diagram

The functional blocks of this device are shown below:

Figure 2:
TSL257 Block Diagram

