Absolute Maximum Ratings (T_A = +25°C)

Supply Voltage Between VDD and GND 3.6V
REXT . . . . . (-0.5V + GND) to (0.5V + VDD)
VOUT . . . . . (-0.5V + GND) to (0.5V + V_{DD})
VOUT Short-Circuit Current . . . . . <10mA
ESD Rating
Human Body Model (Tested per JESD22-A114E) 2kV

Thermal Information

Thermal Resistance (Typical)	θ_{JA} (°C/W)	θ_{JC} (°C/W)
6 Ld ODFN (Notes 4, 5)	88	7.94

Maximum Die Temperature . . . . . +90°C
Storage Temperature . . . . . -40°C to +100°C
Operating Temperature . . . . . -40°C to +85°C
Pb-Free Reflow Profile . . . . . see TB487

CAUTION: Do not operate at or near the maximum ratings listed for extended periods of time. Exposure to such conditions may adversely impact product reliability and result in failures not covered by warranty.

NOTES:

4. θ_{JA} is measured in free air with the component mounted on a high-effective thermal conductivity test board with "direct attach" features. See Tech Brief TB379.
5. For θ_{JC}, the "case temp" location is the center of the exposed metal pad on the package underside.

Electrical Specifications

Unless otherwise noted, all parameter limits are established across the recommended operating conditions: V_{DD} = 3V, T_A = -40°C to +85°C, R_{EXT} = 100kΩ, no load at V_{OUT} and green LED light. (Typical values are at T_A = +25°C). **Boldface limits apply across the operating temperature range, -40°C to +85°C.**

PARAMETER	SYMBOL	TEST CONDITIONS	MIN (Note 6)	TYP	MAX (Note 6)	UNIT
Range of Input Light Intensity for Square Root Relationship to be Held	E			0.01 - 100		lux
Operating Supply Voltage	V_{DD}		**1.8**		**3**	V
Supply Current	I_{DD}	E = 0 lux, -40°C to +60°C		0.7	2	µA
		E = 100 lux		23	**35**	µA
Light-to-Voltage Accuracy	V_{OUT}	E = 10 lux		0.65		V
		E = 50 lux		1.35		V
		E = 100 lux	**1.40**	1.85	**2.30**	V
Voltage Output in the Absence of Light	V_{DARK}	E = 0 lux, -40°C to +60°C		0.95	20	mV
Output Voltage Variation Over Three Light Sources: Fluorescent, Incandescent and Halogen	ΔV_{OUT}			10		%
Power Supply Rejection Ratio	PSRR	E = 100 lux		0.12		mV/V
Maximum Output Compliance Voltage at 95% of Nominal Output	V_{O-CMPL}			V_{DD} - 0.7V		V
Maximum Output Voltage Swing	V_{O-MAX}				**V_{DD}**	V
Rise Time	t_R	E = 0 lux to 100 lux		95		µs
Fall Time	t_F	E = 100 lux to 0 lux		155		µs
Delay Time for Rising Edge	t_D	E = 0 lux to 100 lux		350		µs
Delay Time for Falling Edge	t_S	E = 100 lux to 0 lux		250		µs
Short-Circuit Current of Op Amp	I_{SC}			±12		mA
Slew Rate of Op Amp	S_R			13		V/ms
Offset Voltage of Op Amp	V_{OS}			±0.9		mV

NOTE:

6. Parameters with MIN and/or MAX limits are 100% tested at +25°C, unless otherwise specified. Temperature limits established by characterization and are not production tested.

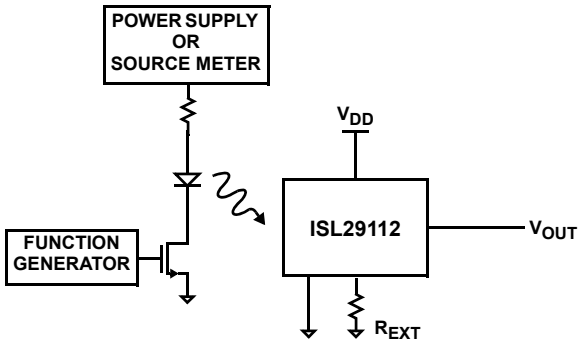

FIGURE 2. TEST CIRCUIT FOR RISE/FALL TIME MEASUREMENT

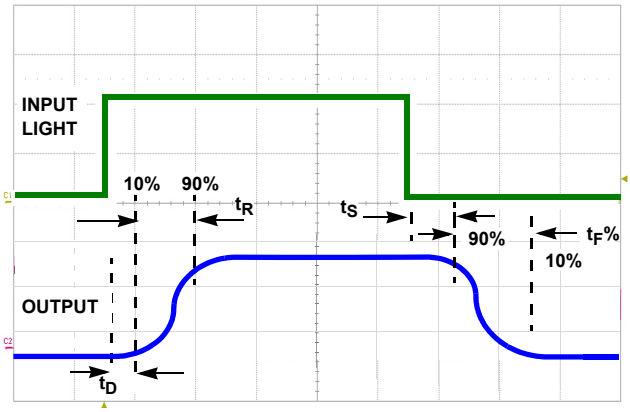

FIGURE 3. TIMING DIAGRAM

Typical Performance Curves

V_{DD} = 3V, T_A = +25°C, R_{EXT} = 100kΩ, no load at V_{OUT}, green LED light, unless otherwise specified.

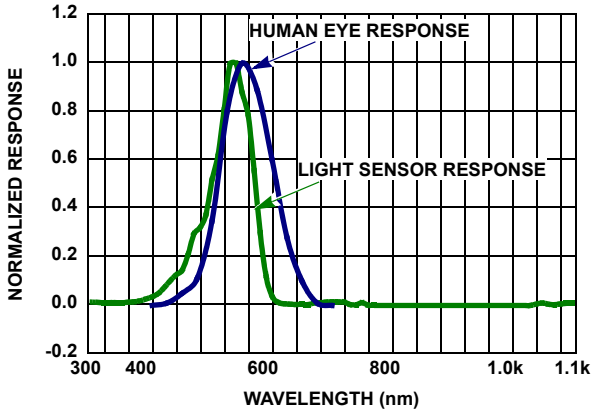

FIGURE 4. SPECTRAL RESPONSE

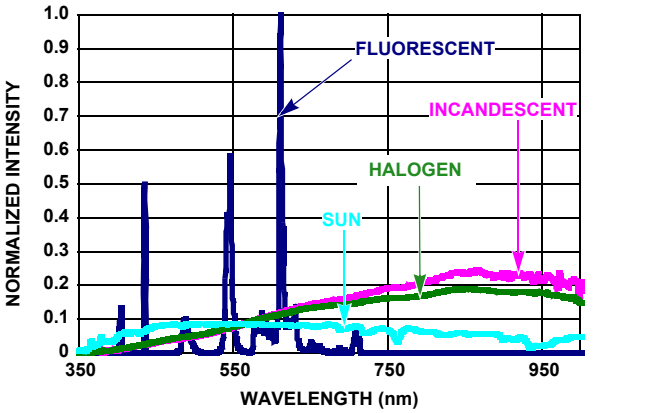

FIGURE 5. SPECTRUM OF FOUR LIGHT SOURCES NORMALIZED BY LUMINOUS INTENSITY (lux)

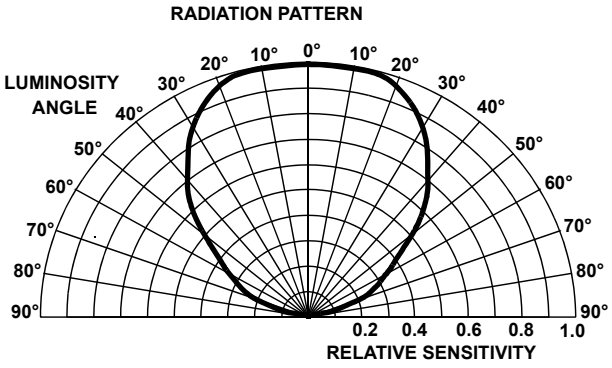

FIGURE 6. RADIATION PATTERN

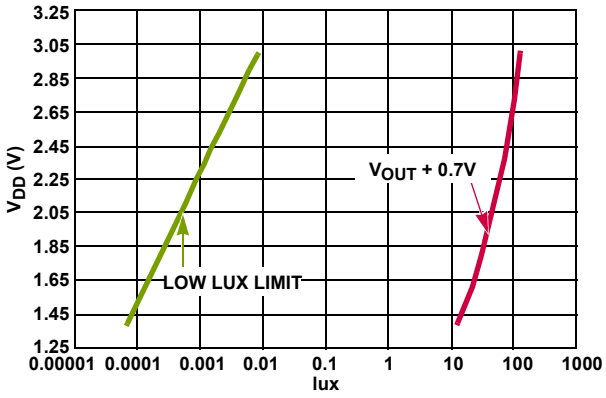

FIGURE 7. V_{DD} OPERATING RANGE (WHITE LED)