

Absolute Maximum Ratings ($T_A = +25^\circ\text{C}$)

Supply Voltage Between VDD and GND	3.6V
R_{EXT}	(-0.5V + GND) to (0.5V + V_{DD})
V_{OUT}	(-0.5V + GND) to (0.5V + V_{DD})
V_{OUT} Short-Circuit Current	<10mA
ESD Rating	
Human Body Model	3kV
Machine Model	300V

Thermal Information

Thermal Resistance (Typical)	θ_{JA} ($^\circ\text{C}/\text{W}$)
6 Ld ODFN (Note 4)	88
Maximum Die Temperature	+90 $^\circ\text{C}$
Storage Temperature	-40 $^\circ\text{C}$ to +100 $^\circ\text{C}$
Operating Temperature	-40 $^\circ\text{C}$ to +85 $^\circ\text{C}$
Pb-Free Reflow Profile (*)	see TB477
*Peak temperature during solder reflow +235 $^\circ\text{C}$ max	

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.

NOTE:

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](#).

Electrical Specifications $V_{DD} = 3\text{V}$, $T_A = +25^\circ\text{C}$, $R_{EXT} = 100\text{k}\Omega$, no load at V_{OUT} , green LED light, unless otherwise specified.

SYMBOL	PARAMETER	TEST CONDITION	MIN (Note 5)	TYP	MAX (Note 5)	UNIT
E	Range of Input Light Intensity for Square Root Relationship to be Held			0.3 - 10k		Lux
V_{DD}	Operating Supply Voltage		1.8		3.3	V
I_{DD}	Supply Current	E = 0 lux		0.65		μA
		E = 100 lux		3.5		μA
		E = 1,000 lux		10	15	μA
V_{OUT0}	Light-to-Voltage Accuracy	E = 100 lux		0.185		V
V_{OUT1}	Light-to-Voltage Accuracy	E = 1000 lux	0.460	0.580	0.680	V
V_{DARK}	Voltage Output in the Absence of Light	E = 0 lux, $R_{EXT} = 10\text{M}\Omega$		20	50	mV
ΔV_{OUT}	Output Voltage Variation Over Three Light Sources: Fluorescent, Incandescent, and Halogen			10		%
PSRR	Power Supply Rejection Ratio	E = 100 lux, $V_{DD} = 1.8\text{V}$ to 3.6V		2.5		mV/V
V_{O-CMPL}	Maximum Output Compliance Voltage at 95% of Nominal Output			$V_{DD} - 0.7\text{V}$		V
V_{O-MAX}	Maximum Output Voltage Swing				V_{DD}	V
t_R	Rise Time	E = 0 lux to 300 lux		68		μs
		E = 0 lux to 1000 lux		68		μs
t_F	Fall Time	E = 300 lux to 0 lux		1830		μs
		E = 1000 lux to 0 lux		970		μs
t_D	Delay Time for Rising Edge	E = 0 lux to 300 lux		352		μs
		E = 0 lux to 1000 lux		145		μs
t_S	Delay Time for Falling Edge	E = 300 lux to 0 lux		22		μs
		E = 1000 lux to 0 lux		22		μs
ISC	Short Circuit Current of Op Amp			± 11		mA
SR	Slew Rate of Op Amp			± 10		V/ms
VOS	Offset Voltage of Op Amp			± 1.2		mV

NOTE:

5. Compliance to datasheet limits is assured by one or more methods: production test, characterization, and/or design.

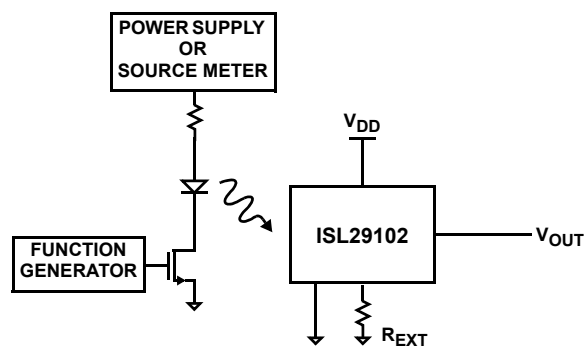


FIGURE 2. TEST CIRCUIT FOR RISE/FALL TIME MEASUREMENT

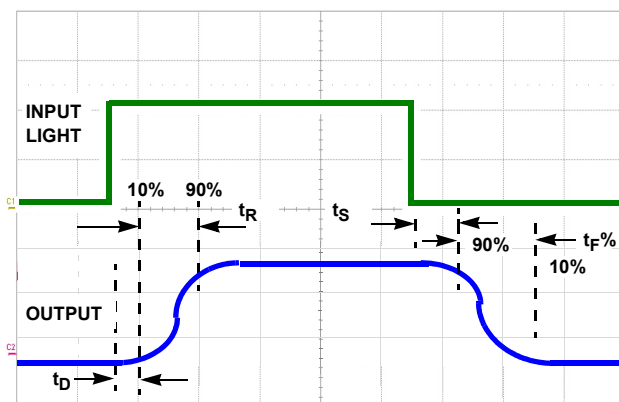


FIGURE 3. TIMING DIAGRAM

Typical Performance Curves

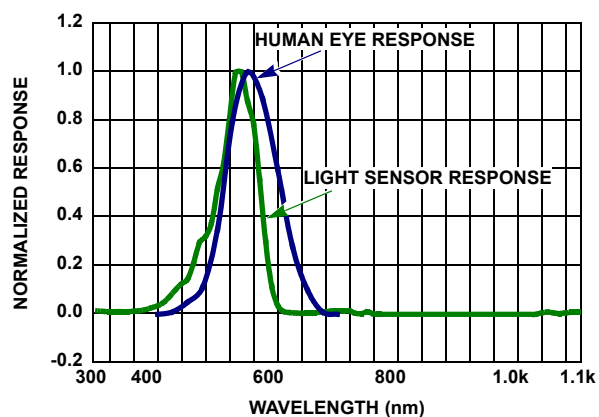


FIGURE 4. SPECTRAL RESPONSE

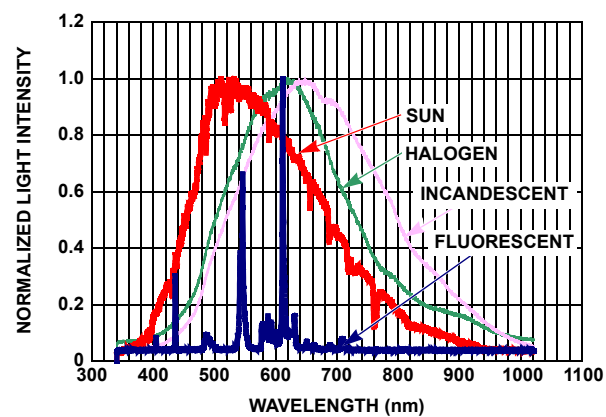


FIGURE 5. SPECTRUM OF LIGHT SOURCES

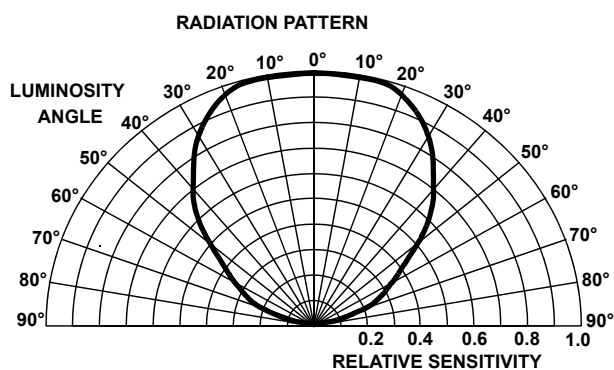


FIGURE 6. RADIATION PATTERN