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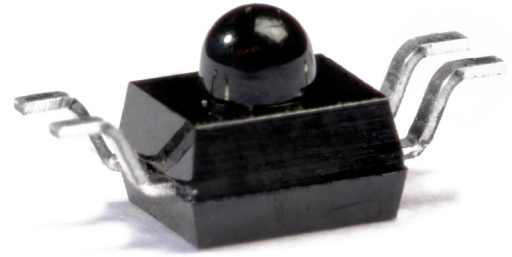


# SMD Receiver Component

## OPL6000

### Features:

- Up to 256kbps Operation
- Up to 250klux Ambient Light Immunity
- Output Drive for Interfacing to Microcontroller
- Reverse Gull Wing Design
- Compliant with Smart Power Meter Standard ANSI C12.18
- Compatible with OP181 Emitter Component

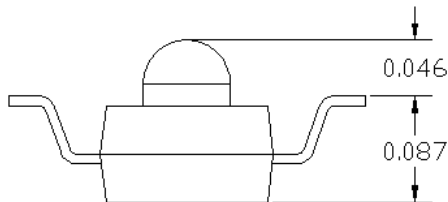
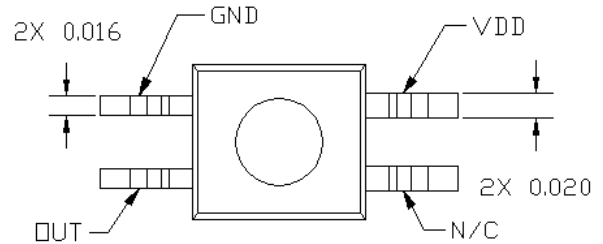
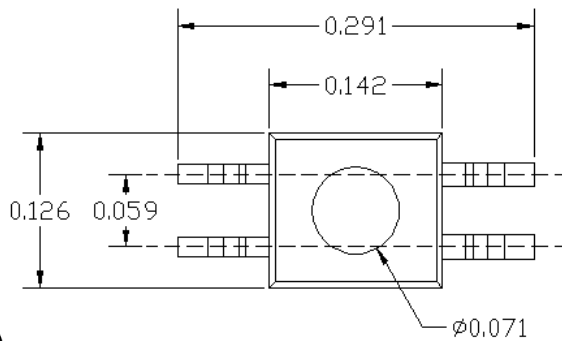
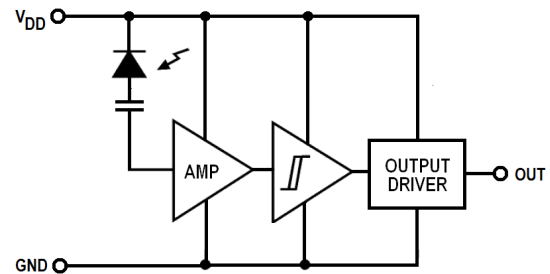


### Description:

The **OPL6000** is a surface mount receiver component incorporating a custom CMOS ASIC. The product features a digital output in a push-pull inverter design. The circuitry provides ambient light immunity while maintaining low power consumption. The ASIC is lead frame mounted and overmolded, incorporating a lens to achieve maximum light coupling ability. In addition, the overmold compound provides visible light rejection. While this part has been designed specifically for the smart power meter industry, other applications are certainly possible.

### Applications:

- Smart power meter optical port
- Over the air communications



Note: The  $V_{DD}$  and N/C leads are the wider of the four leads as indicated above but also have red strip indicator on the bottom of the leads.



**ESD**  
(Human Body Model)



**MOISTURE**  
(Level-4)



**Pb-Free**  
(RoHS)

Dimensions are  $\pm 0.005$  unless otherwise specified

#### General Note

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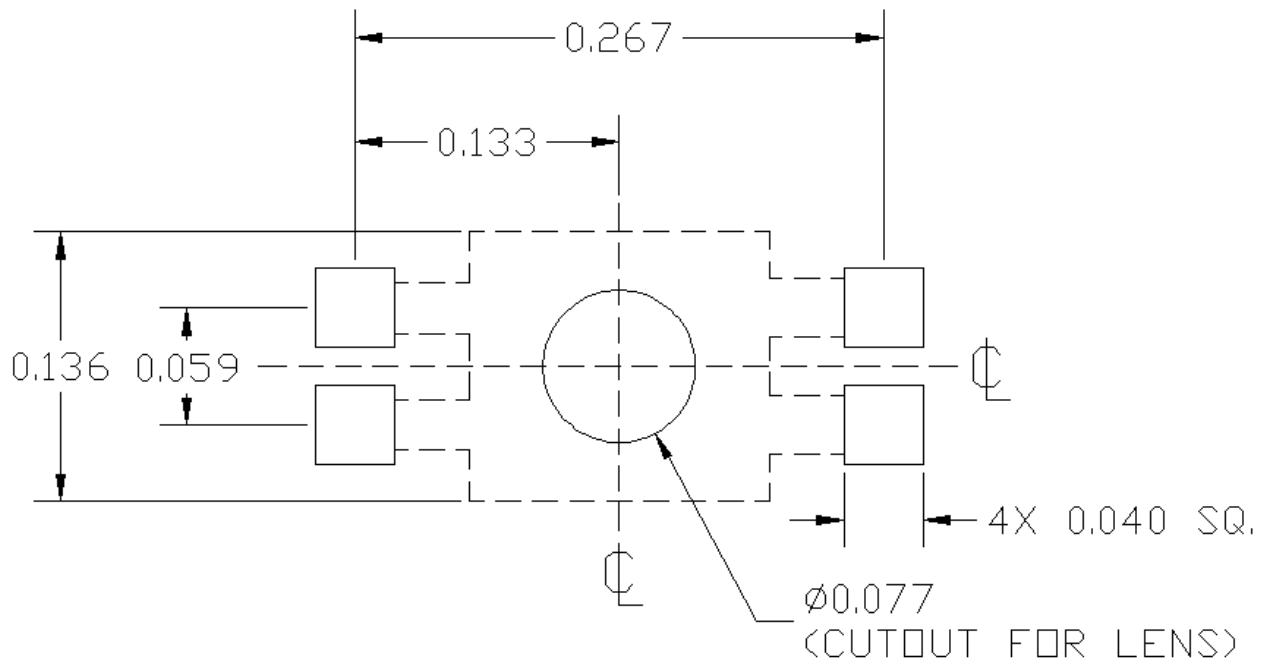
**Absolute Maximum Ratings** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

**Overall Product**

Storage Temperature Range	-55°C to +100°C
Operating Temperature Range	-40°C to +85°C
D.C. Supply Voltage	3.0 - 5.5 V
Output Drive Current	1 mA
Power Dissipation in Active / Inactive Mode <sup>(1)(2)</sup>	30 mW / 5mW <sup>(2)</sup>
Incident Irradiance	250,000 lux
Solder Reflow Temperature <sup>(3)</sup>	260°C

**Notes:**

- Active mode is defined as the state during which time a signal is being received and the output stages are active. Inactive mode is defined as the state during which time no signal is being received and the output stages are inactive.
- Derate linearly at 0.40 mW/°C (active mode) and 0.067 mW/°C (inactive mode) above 25°C. Solder time less than 5 seconds at temperature extreme.
- Solder time less than 5 seconds at temperature extreme. Solder time within 5° of peak temperature is 20 to 40 seconds.

**Recommended PCB Layout**

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## Electrical Specifications

### Electrical Characteristics ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS	
$V_{DD}$	Operating Supply Voltage	3.0	3.3	5.5	V		
$I_{DD}$	Supply Current <sub>(1)</sub>	Active Mode	-	-	5	mA	$V_{DD} = 3.0$ to $5.5$ V No load current
		Inactive Mode	-	-	1.0		
PSRR	Power Supply Rejection Ratio	10	-	-	%	$f = 1 - 1$ MHz, $V_{DD} > 3.0$ V	
$E_{eT(+)}$	Positive Going Threshold Irradiance	-	0.100	0.125	mW/cm <sup>2</sup>	$V_{DD} = 3.3$ V $I_p = 940$ nm; collimated radiation	
$V_{OL}$	Low Level Output Voltage	-	300	400	mV	$V_{DD} = 3.0$ to $5.5$ V, $I_o = 1$ mA $E_e = 0$ mW/cm <sup>2</sup>	
$V_{OH}$	High Level Output Voltage	$V_{DD} - 1.0$	-	-	V	$V_{DD} = 3.0$ to $5.5$ V, $I_o = 1$ mA $E_e = 7.5$ mW/cm <sup>2</sup>	
$t_r, t_f$	Rise Time, Fall Time	-	-	150	ns	$V_{DD} = 3.3$ V, $f = 1$ kHz $E_e = 7.5$ mW/cm <sup>2</sup> Decouple Cap ( $V_{DD}$ to GND) = $0.1$ $\mu$ F	
$t_{PDHL}, t_{PDLH}$	Propagation Delay	-	-	1.0	$\mu$ s		
$I_I$	Input Leakage Current	-10	-	10	$\mu$ A		
$I_o$	Output Drive Current	-	-	1.0	mA	$V_{DD} = 3.3$ V	

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Inactive mode is defined as the state during which time no signal is being received and the output stages are inactive.

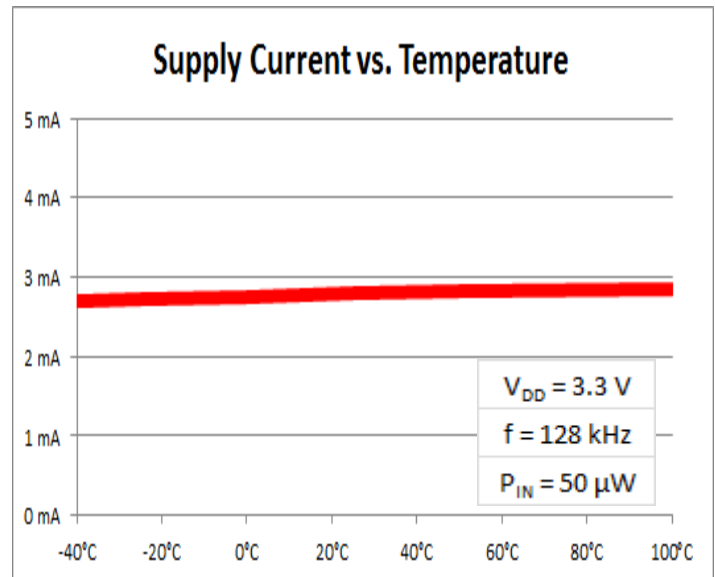
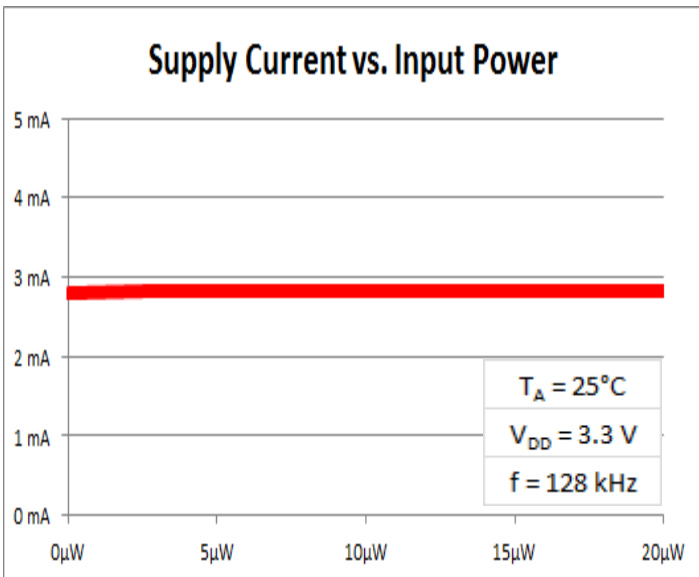
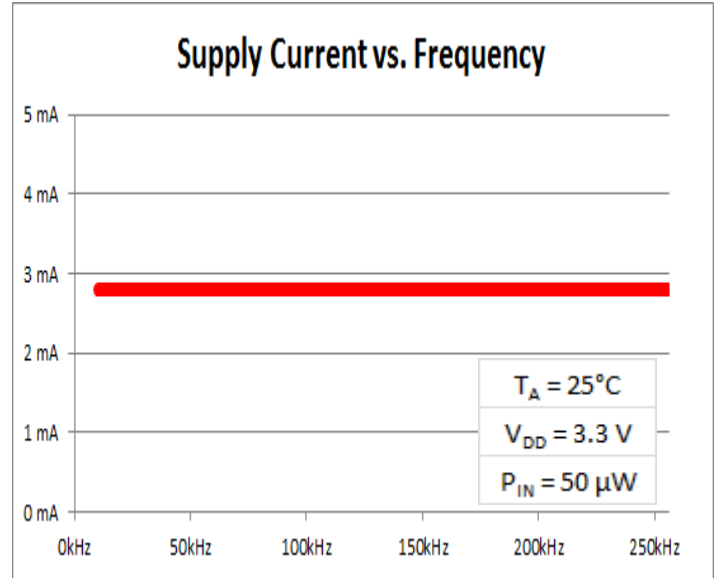
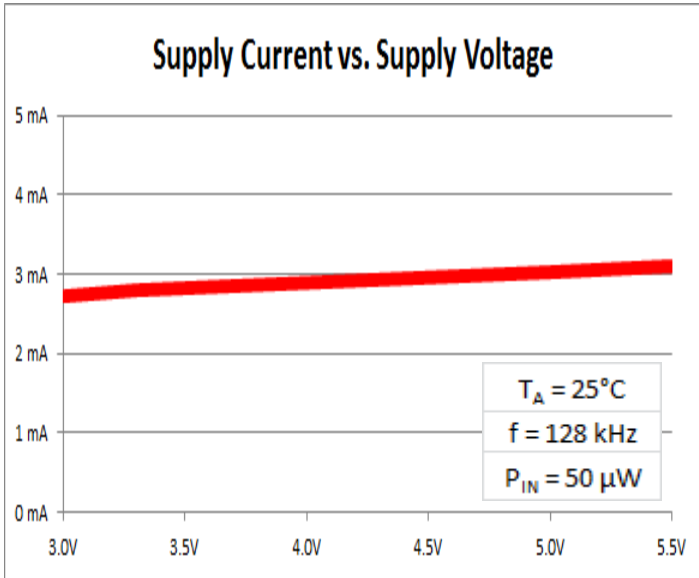
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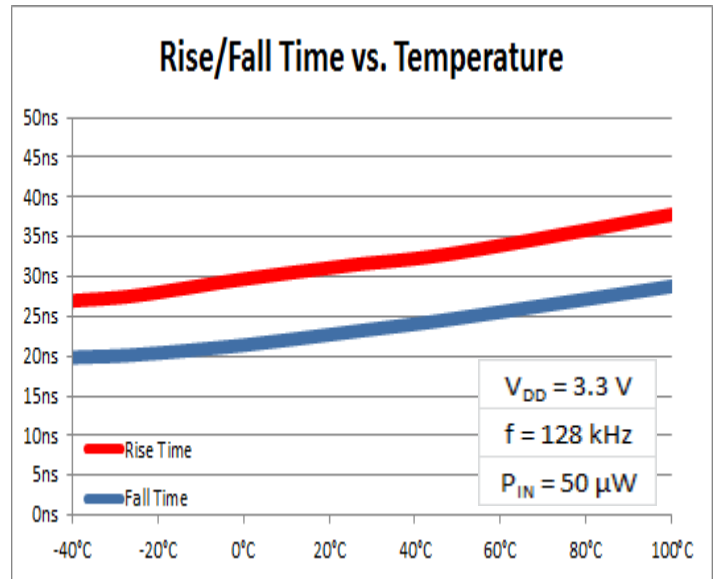
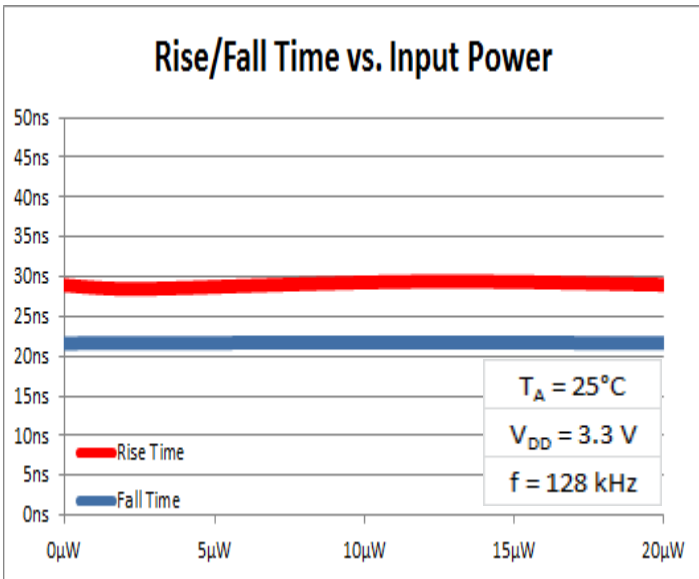
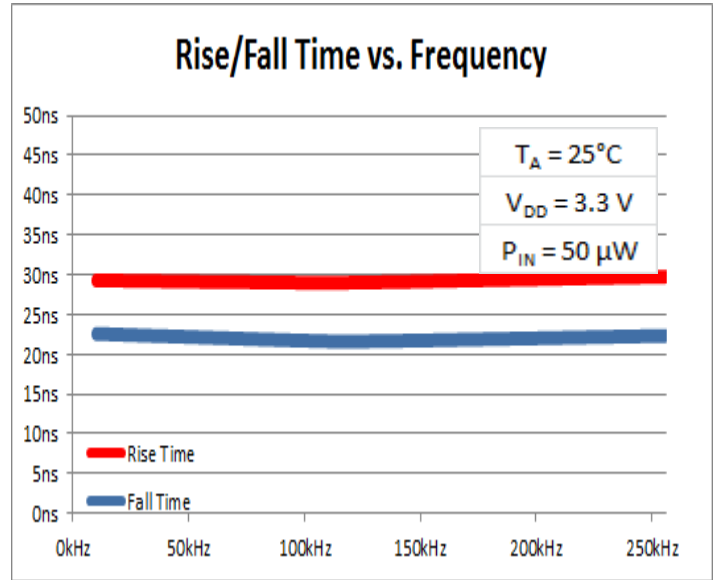
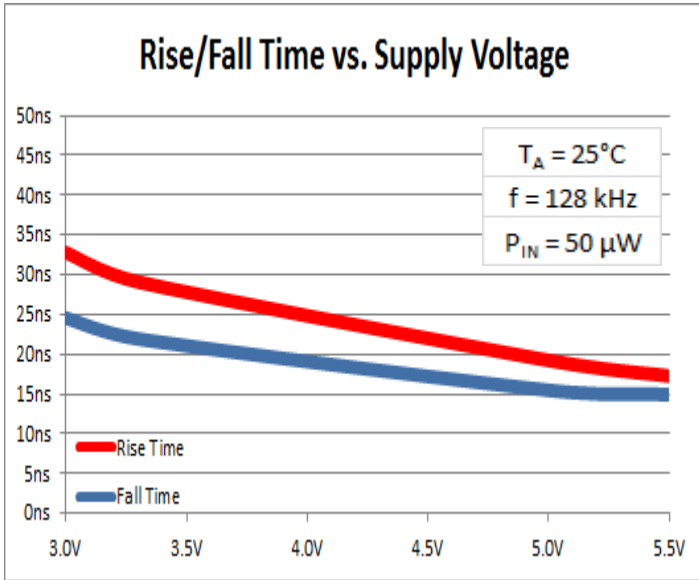
## Supply Current



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### Rise/Fall Time



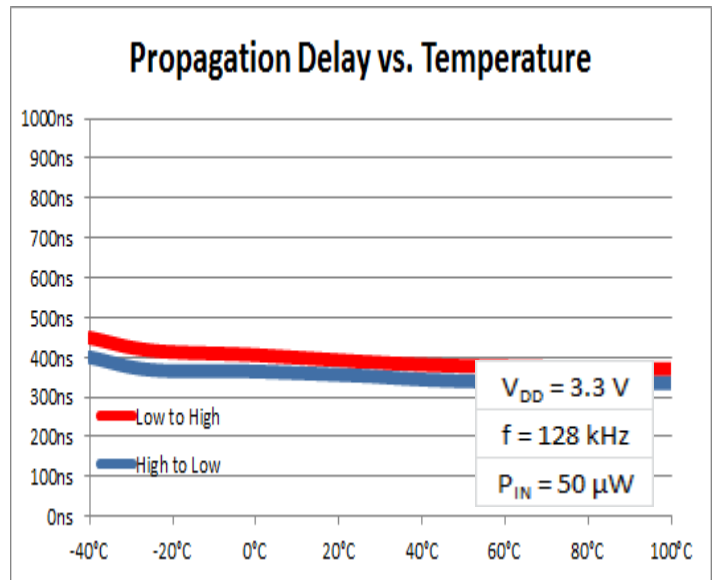
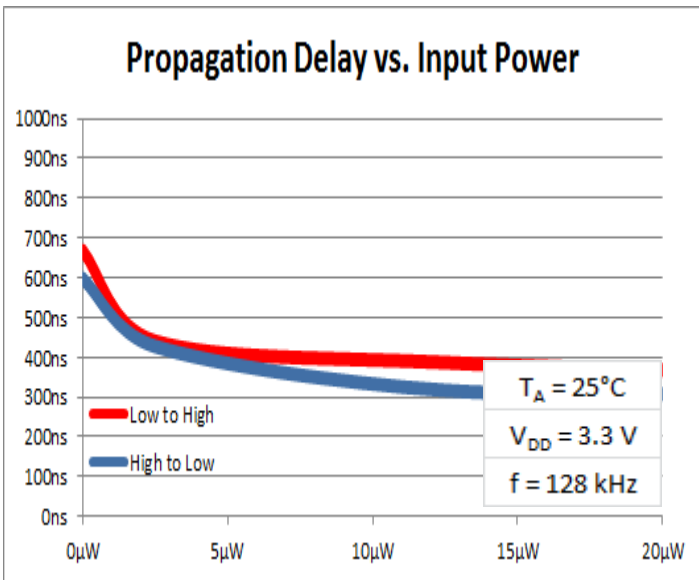
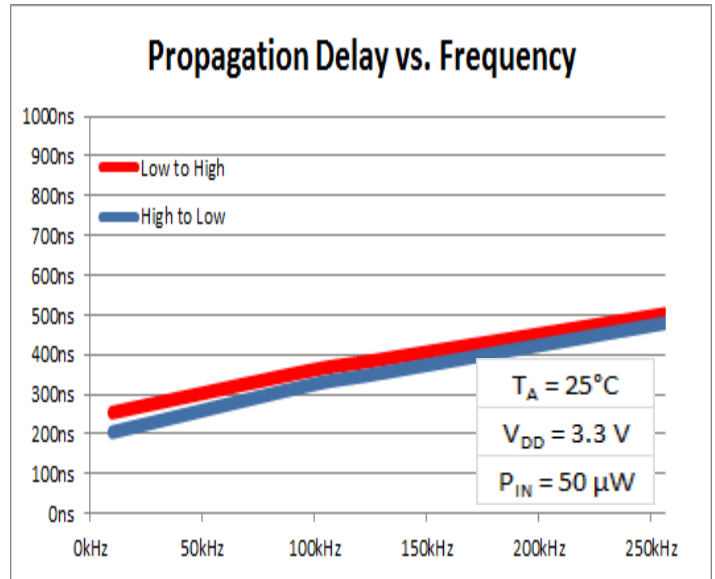
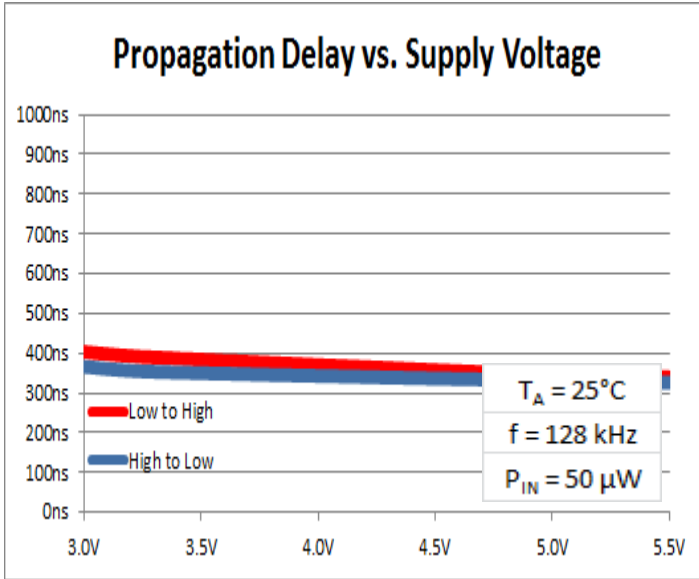
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### Propagation Delay

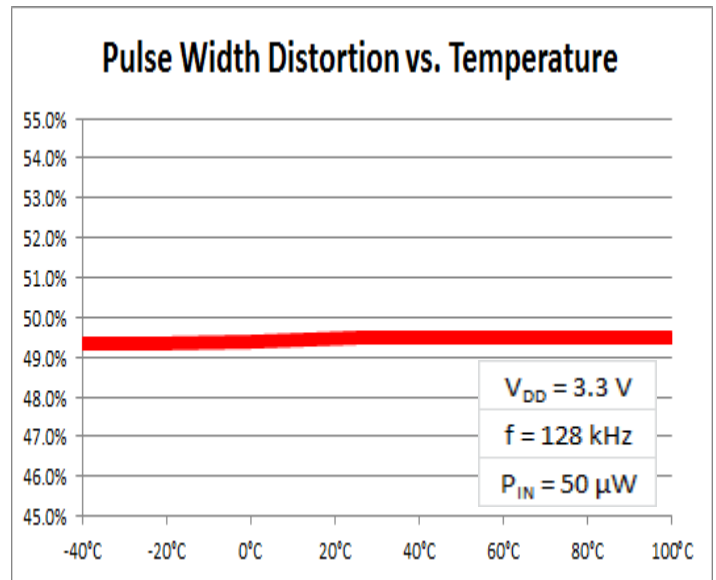
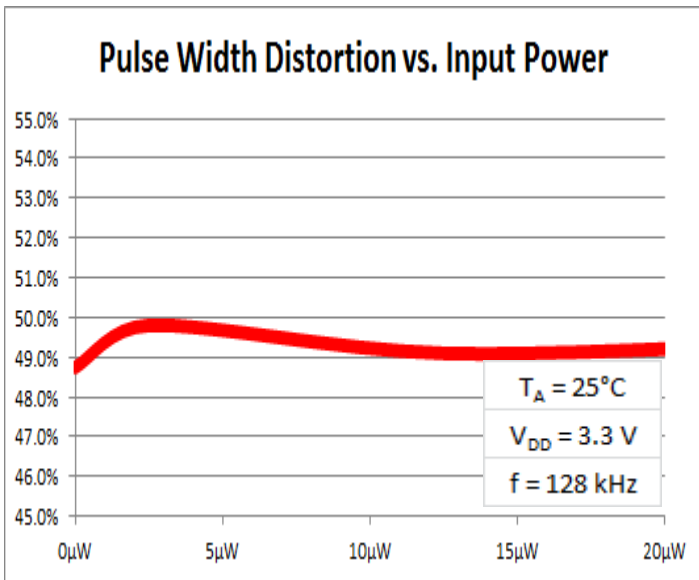
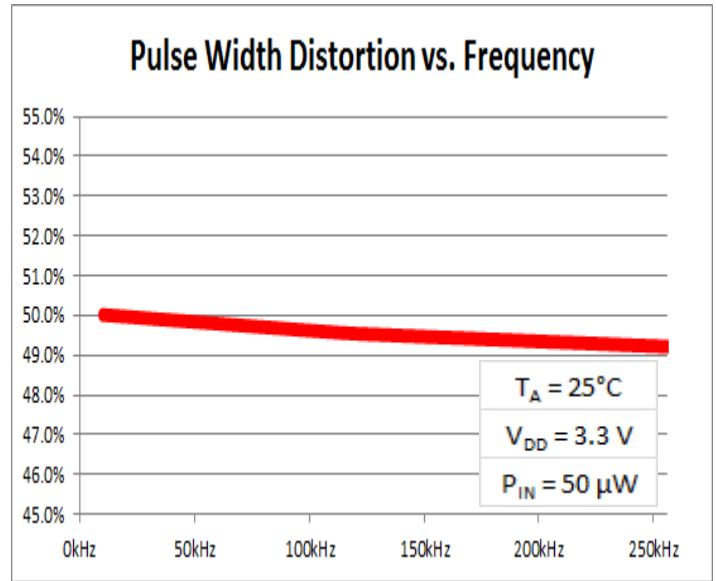
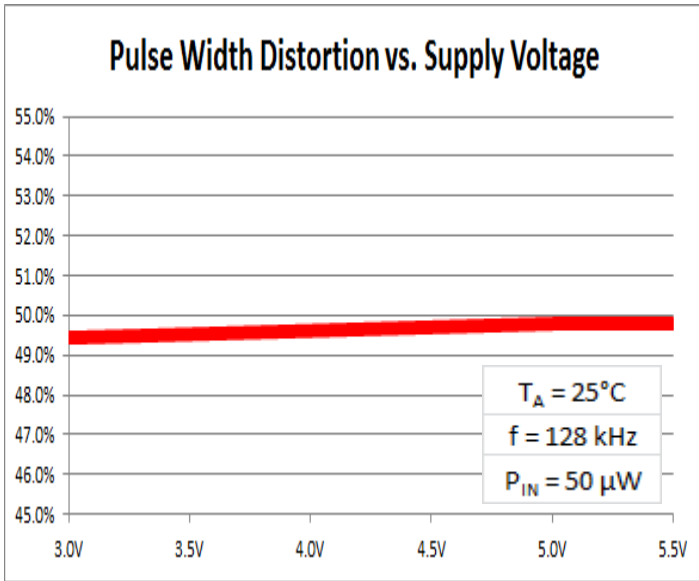


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### Pulse Width Distortion



**General Note**

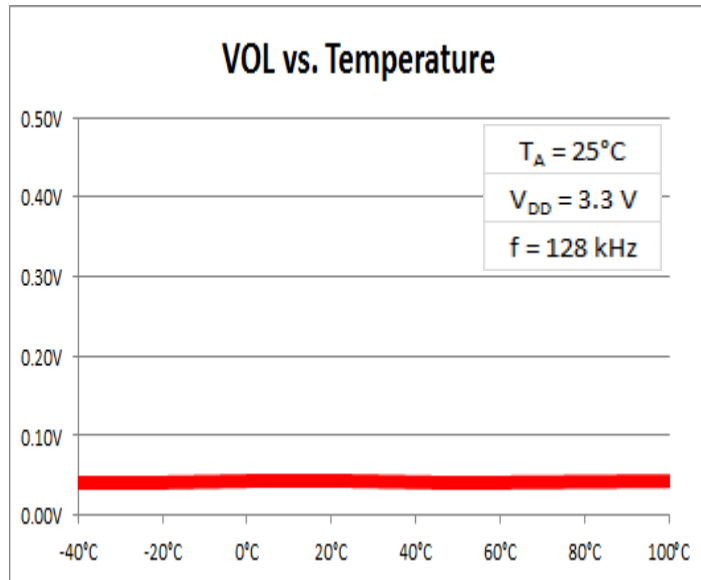
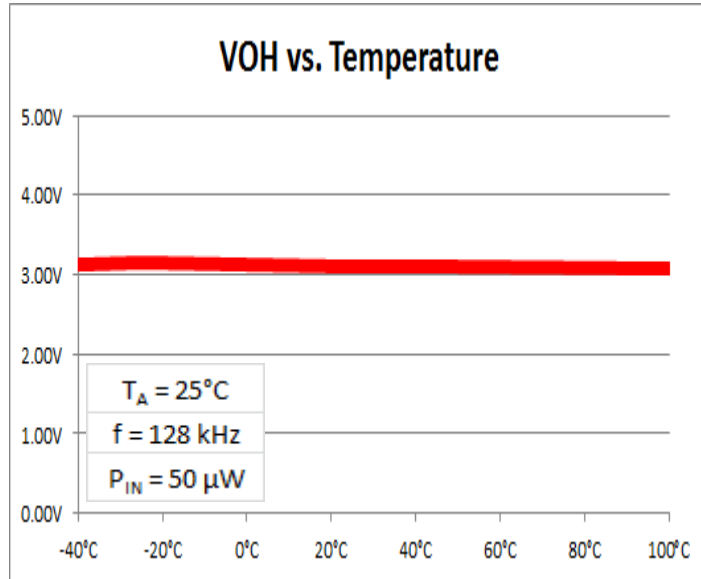
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### High and Low Level Output Voltage



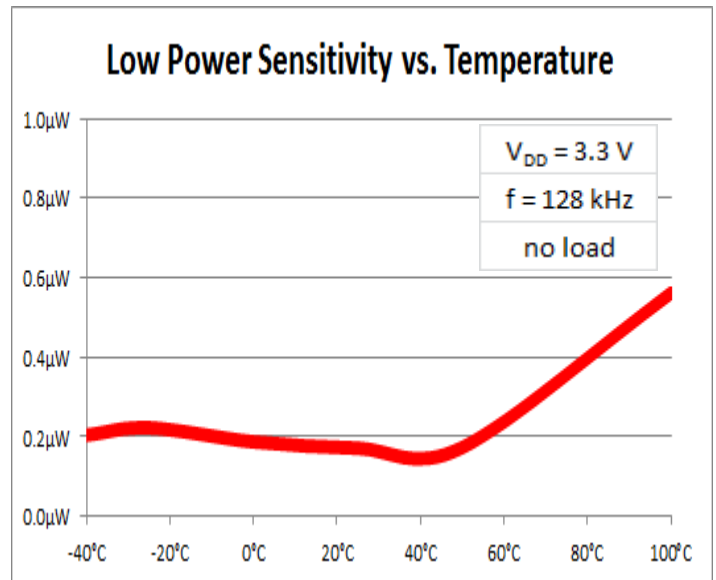
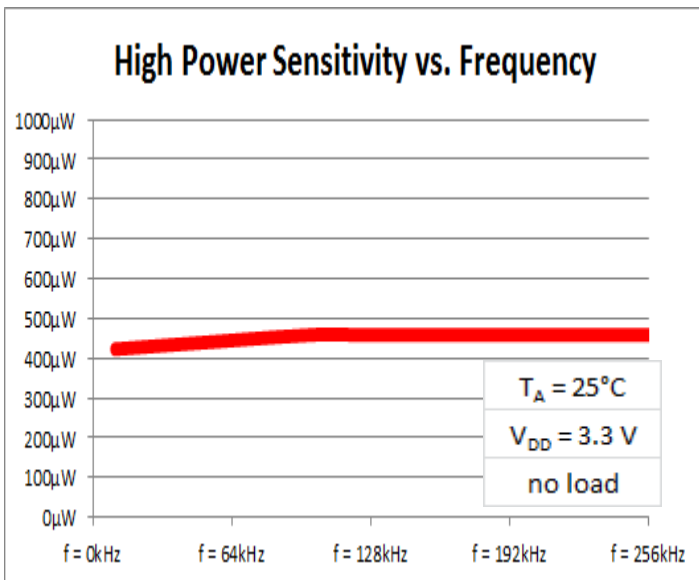
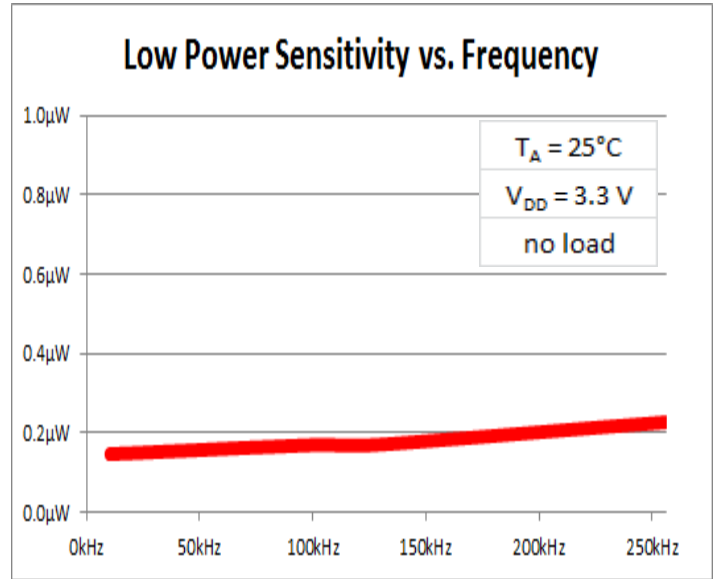
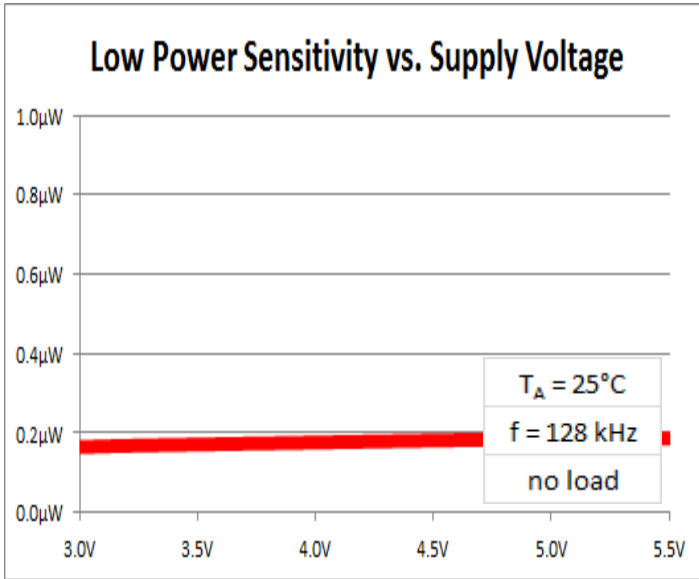
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### Sensitivity



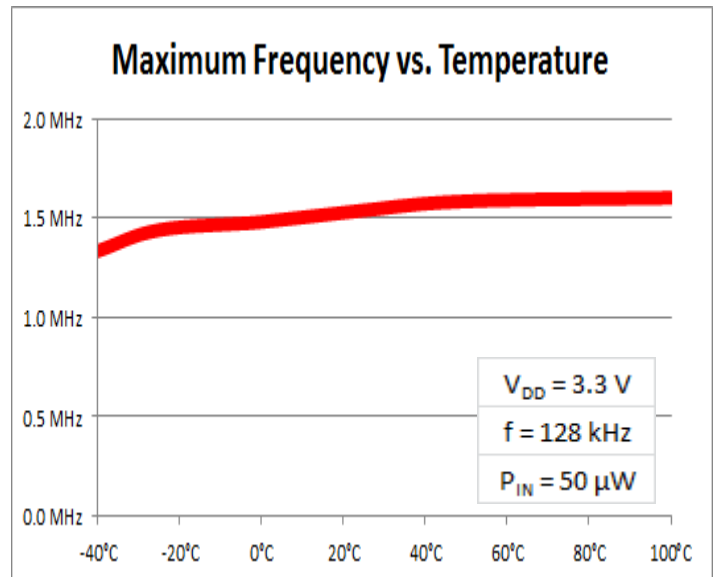
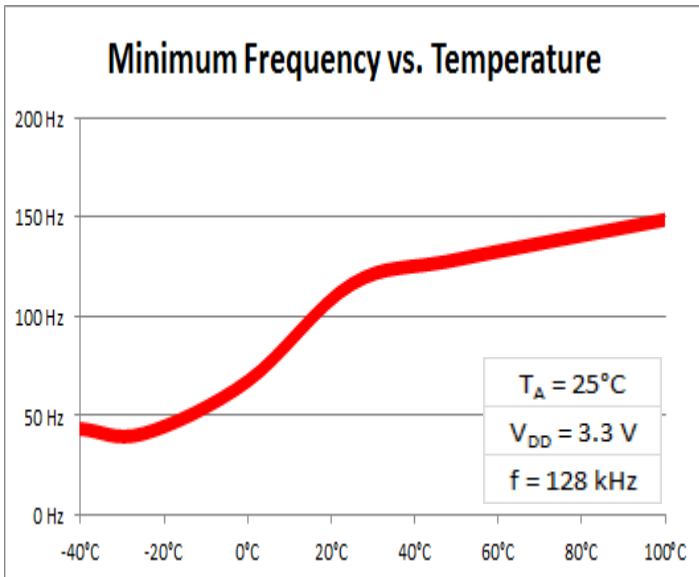
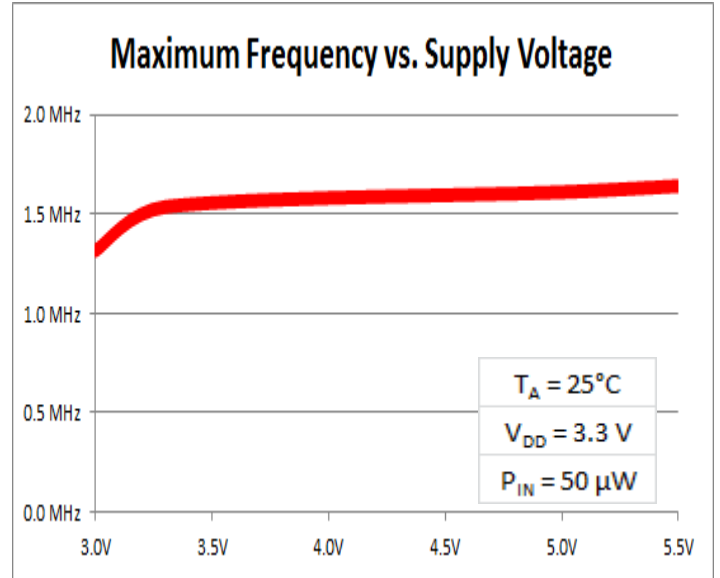
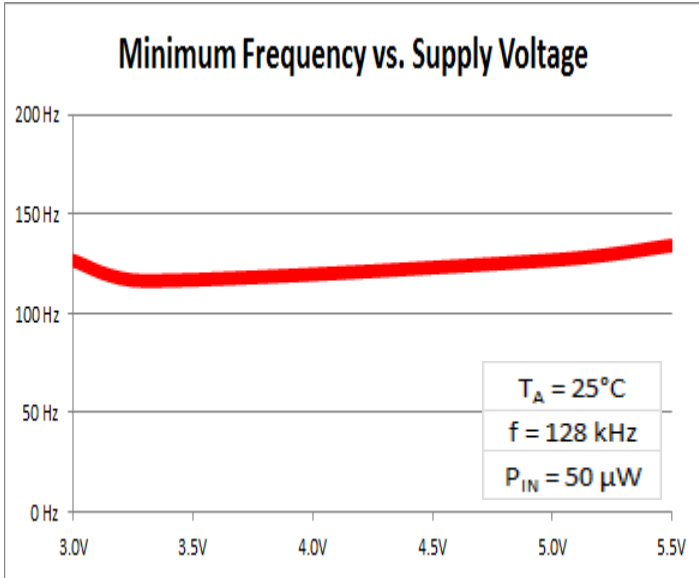
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## Frequency Response



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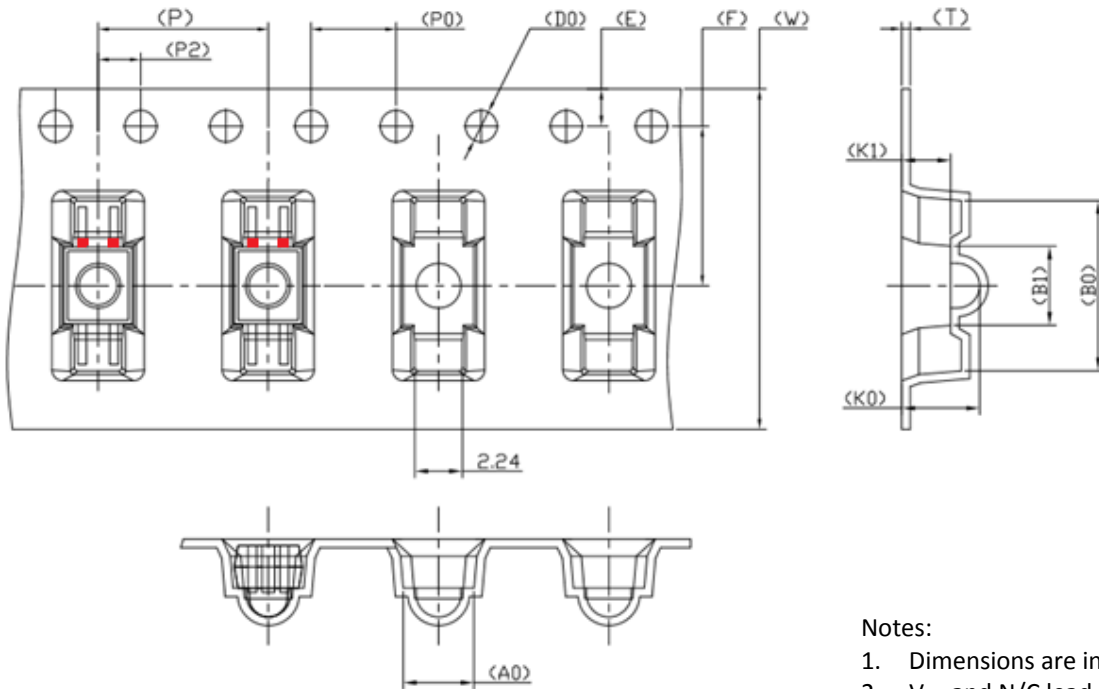


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# SMD Receiver Component

OPL6000

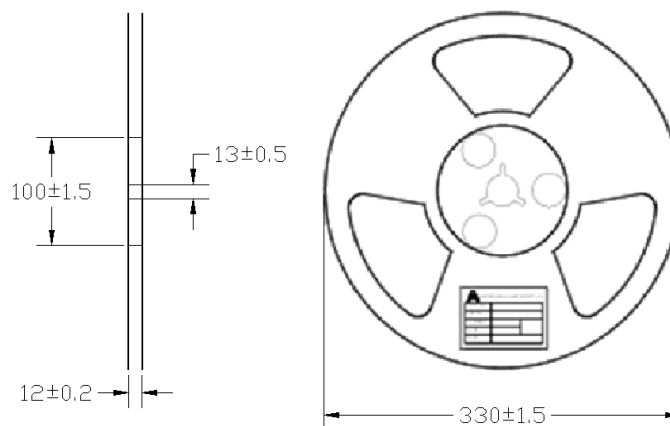
## Packaging



Notes:

1. Dimensions are in mm.
2.  $V_{DD}$  and N/C lead (marked with red stripe) is nearest sprocket holes.

W	16.00±0.30	P	8.00±0.10	A0	3.33±0.10	B0	8.00±0.10
E	1.75±0.10	P0	4.00±0.10	K0	3.66±0.10	B1	3.73±0.10
F	7.50±0.10	P2	2.00±0.10	K1	2.30±0.10		
T	0.40±0.05	D0	∅1.50± $\begin{smallmatrix} 0.10 \\ 0.00 \end{smallmatrix}$				



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