Sensing and Control

SMD Receiver Component

OPL6000

Features:

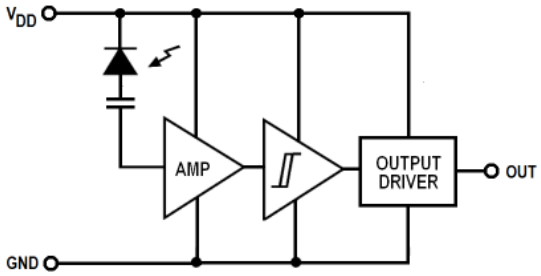
- Up to 256kbps Operation
- Up to 250klux Ambient Light Immunity
- Output Drive for Interfacing to Microcontroller
- Reverse Gull Wing Design
- Compliant with Smart Power Meter Standard ANSI C12.18
- Compatible with OP181 Emitter Component

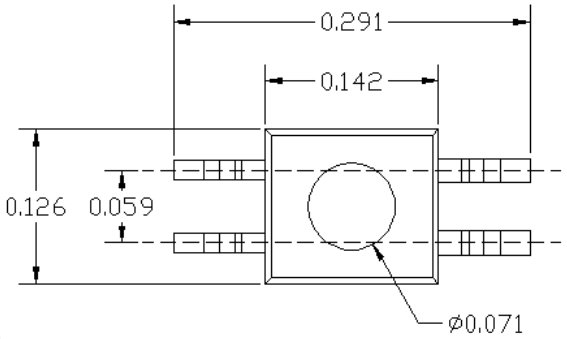
Description:

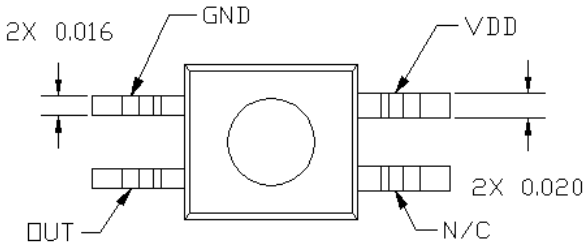
The **OPL6000** is a surface mount receiver component incorporating a custom CMOS ASIC. The product features a digital output in a push-pull inverter design. The circuitry provides ambient light immunity while maintaining low power consumption. The ASIC is lead frame mounted and overmolded, incorporating 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.

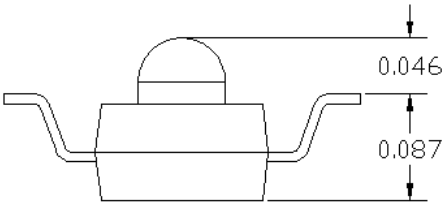
Applications:

- 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 ±0.005 unless otherwise specified

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SMD Receiver Component

OPL6000

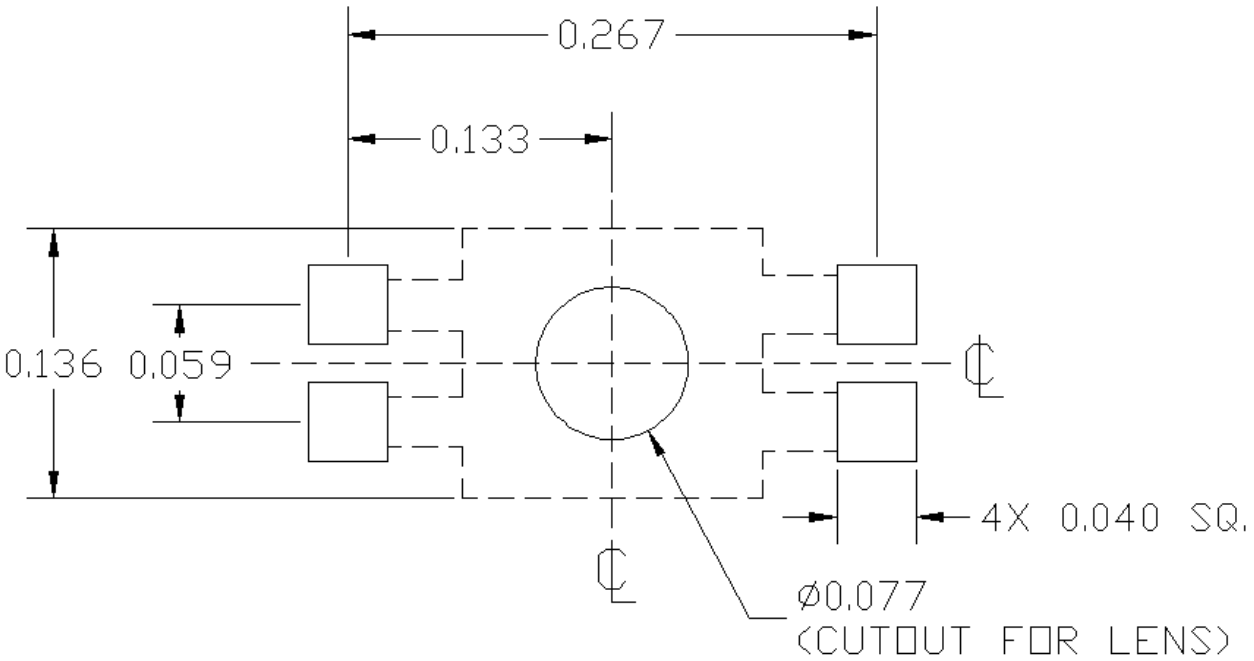
Absolute Maximum Ratings (T_A = 25° C unless otherwise noted)

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[1][2]	30 mW / 5mW[2]
Incident Irradiance	250,000 lux
Solder Reflow Temperature[3]	260° C

Notes:
1. 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.
2. 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.
3. 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 °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(1)	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} > 3.0V
$E_{eT(+)}$	Positive Going Threshold Irradiance		-	0.100	0.125	mW/cm^2	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^2
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^2
t_r, t_f	Rise Time, Fall Time		-	-	150	ns	V_{DD} = 3.3 V, f = 1 kHz E_e = 7.5 mW/cm^2 Decouple Cap (V_{DD} to GND) = 0.1 µF
t_{PDLH}, t_{PDHL}	Propagation Delay		-	-	1.0	µs	
I_I	Input Leakage Current		-10	-	10	µA	
I_O	Output Drive Current		-	-	1.0	mA	V_{DD} = 3.3 V

Notes:
1. 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.

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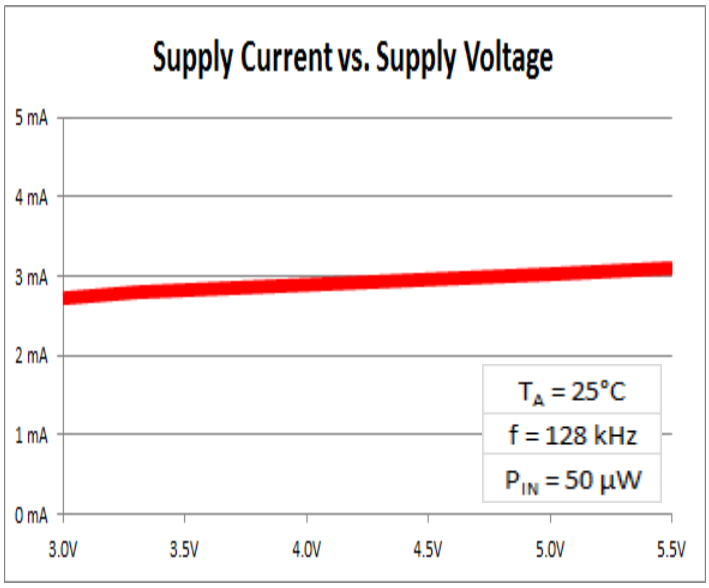
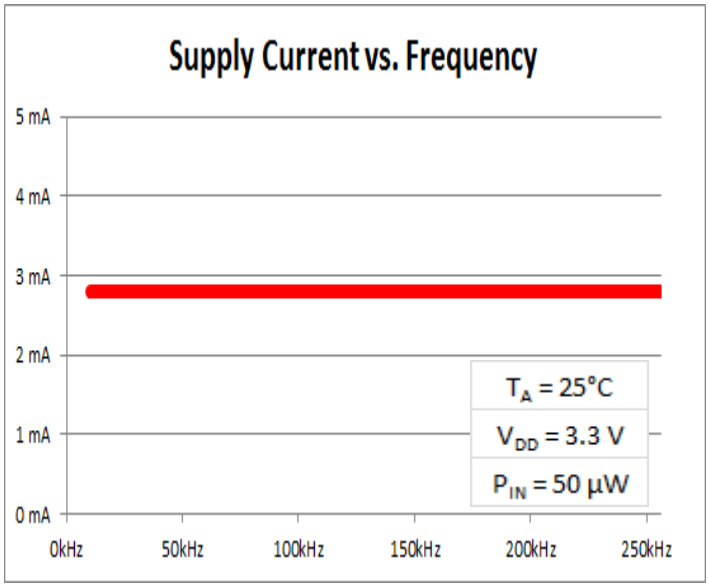
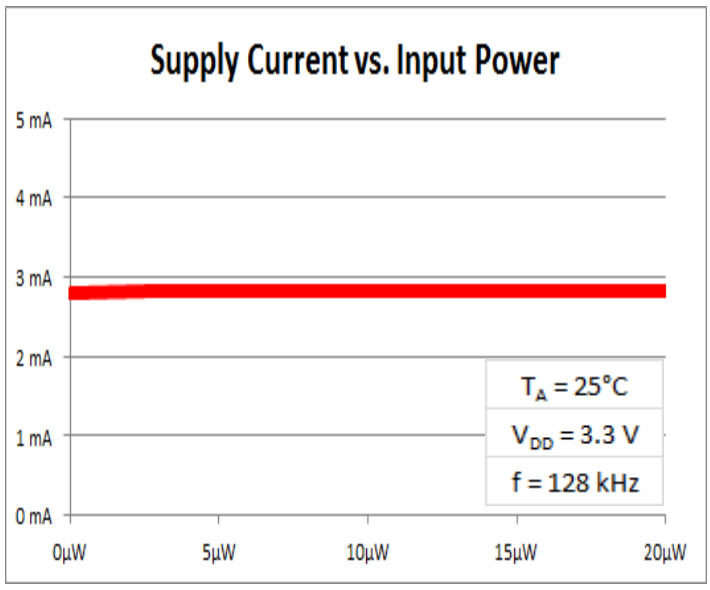
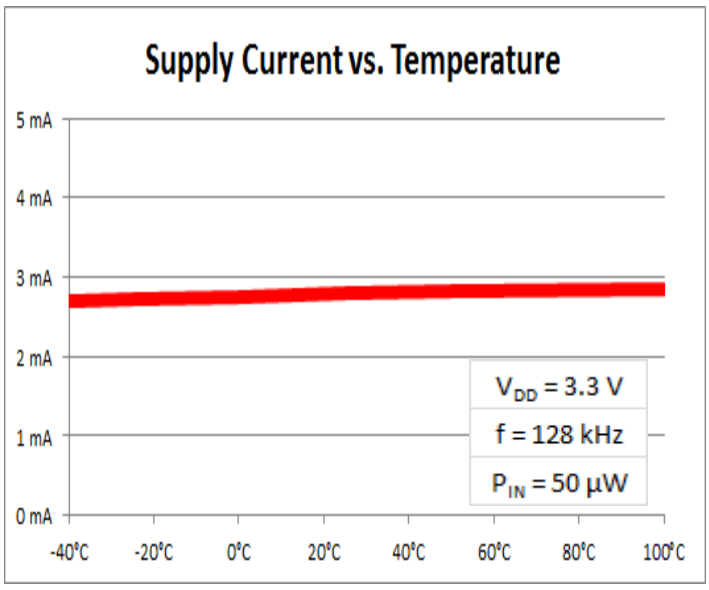
Supply Current

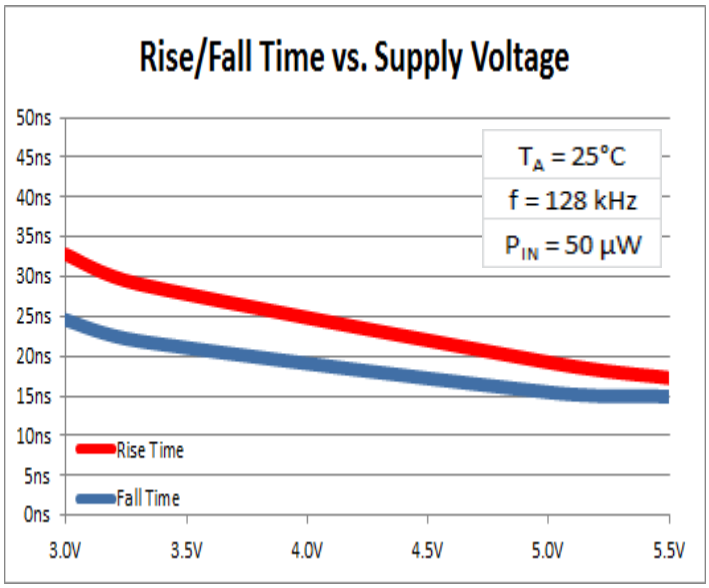


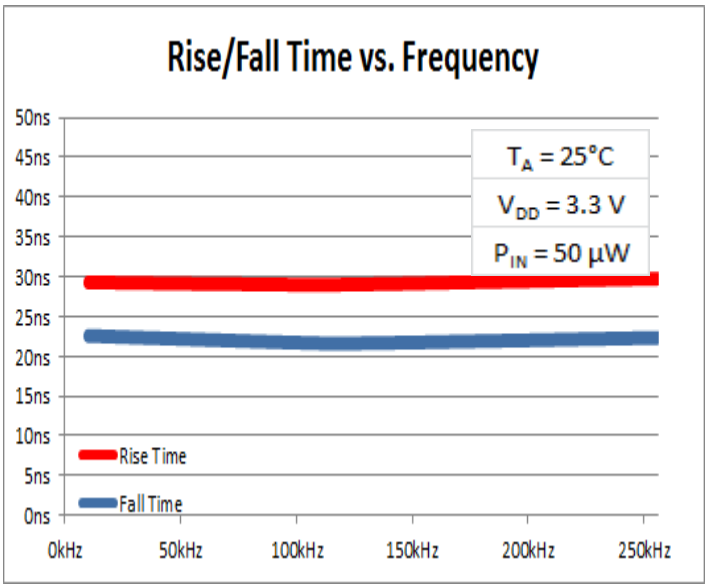


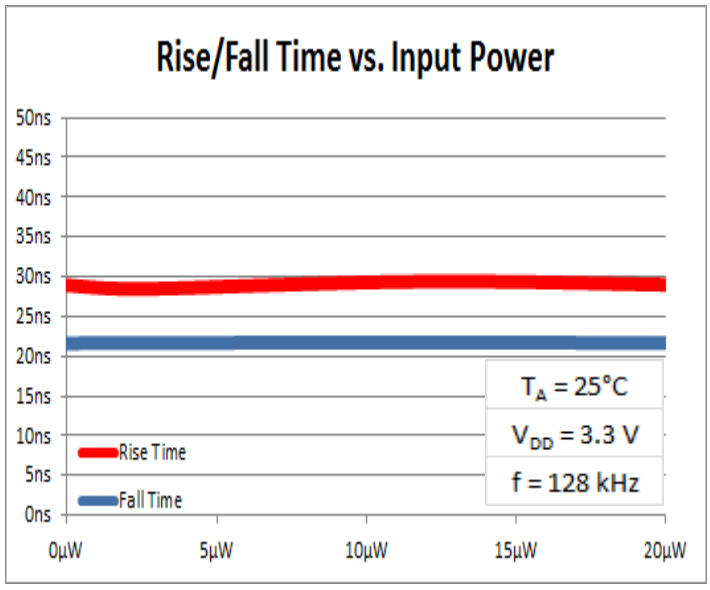


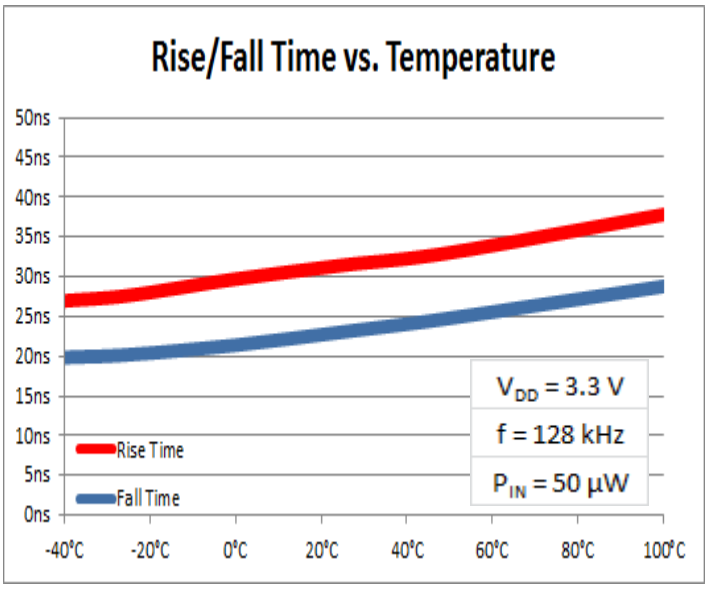


Rise/Fall Time

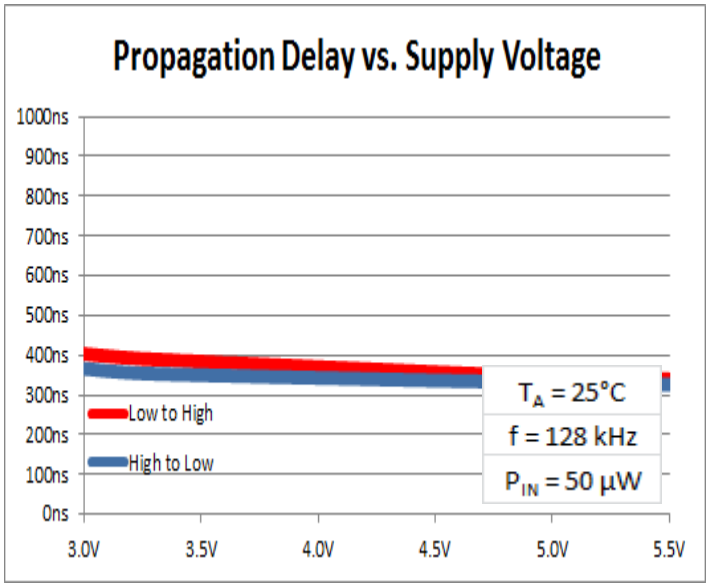


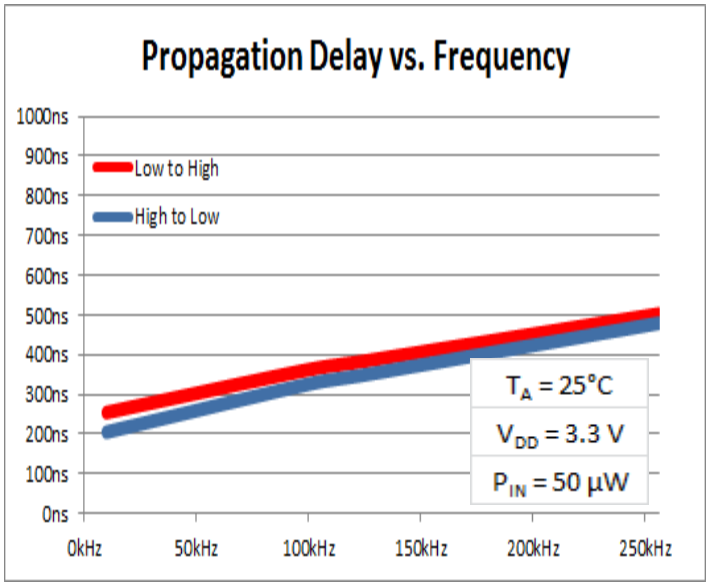


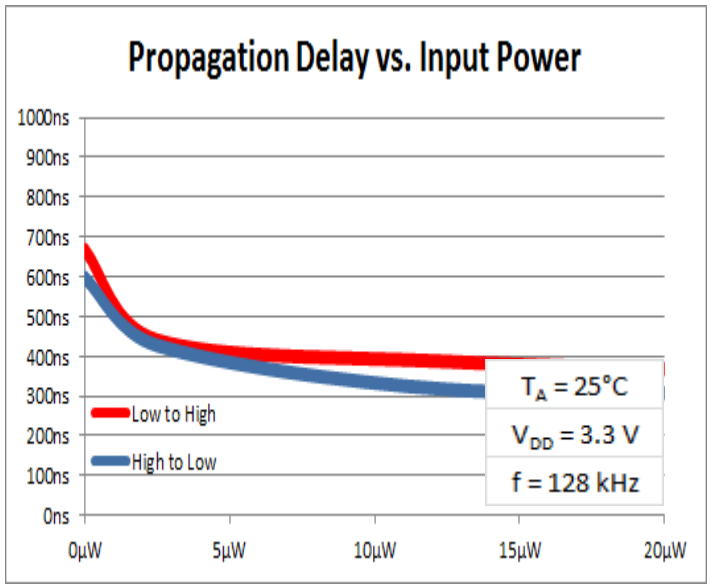


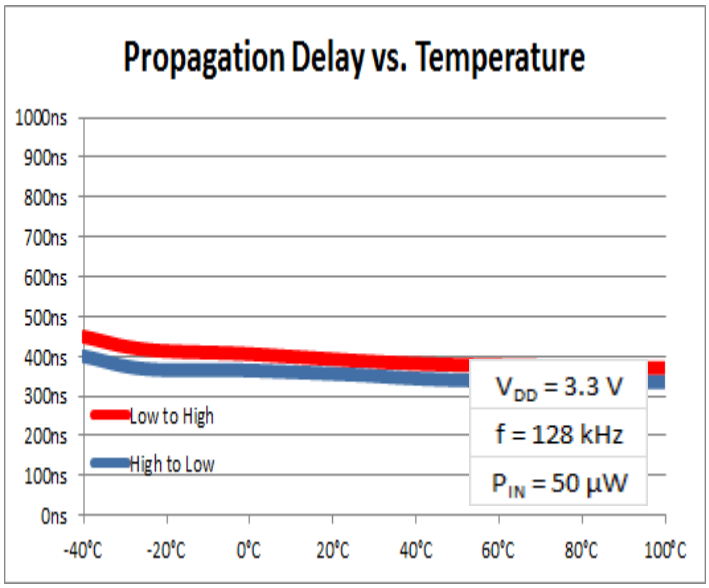


Propagation Delay

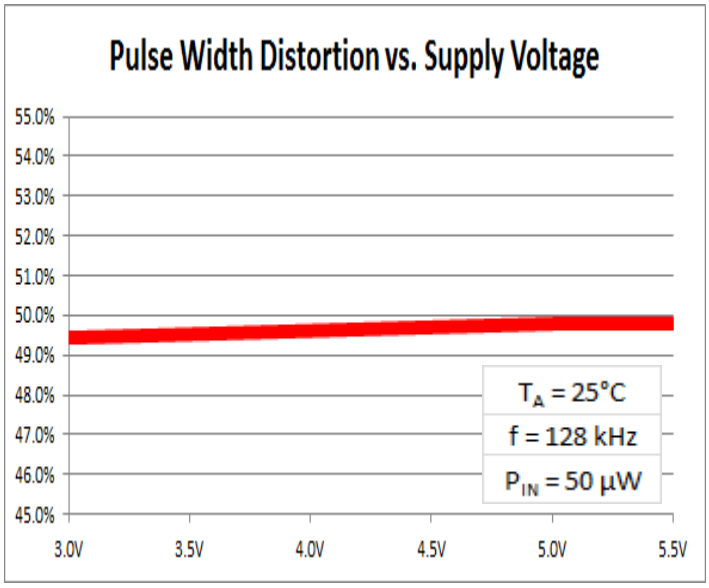


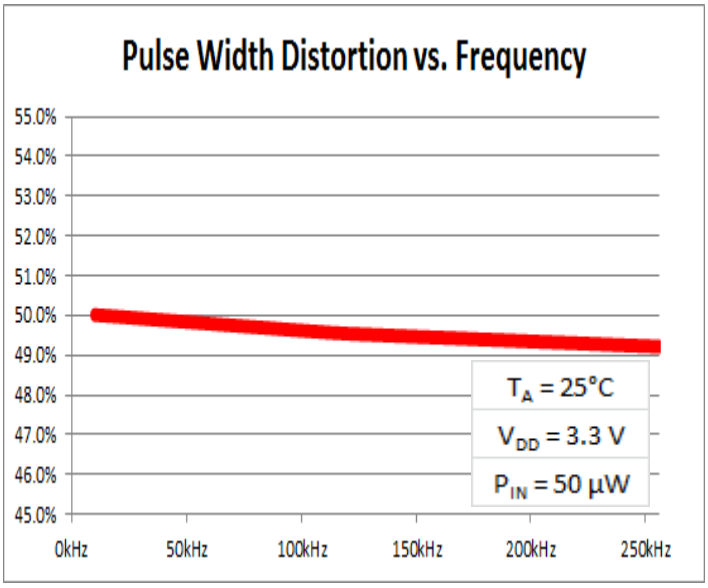


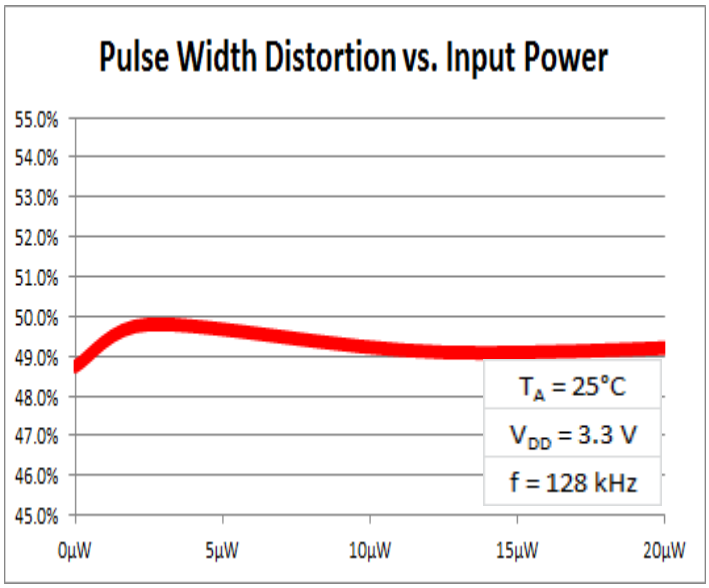


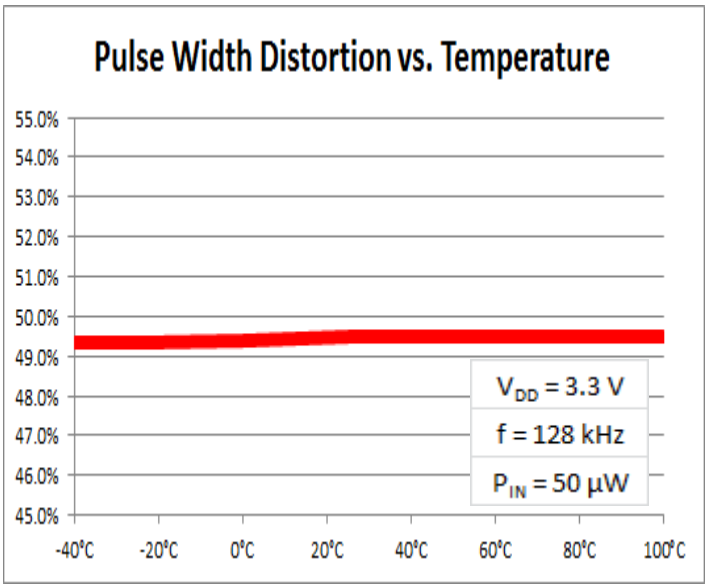


Pulse Width Distortion

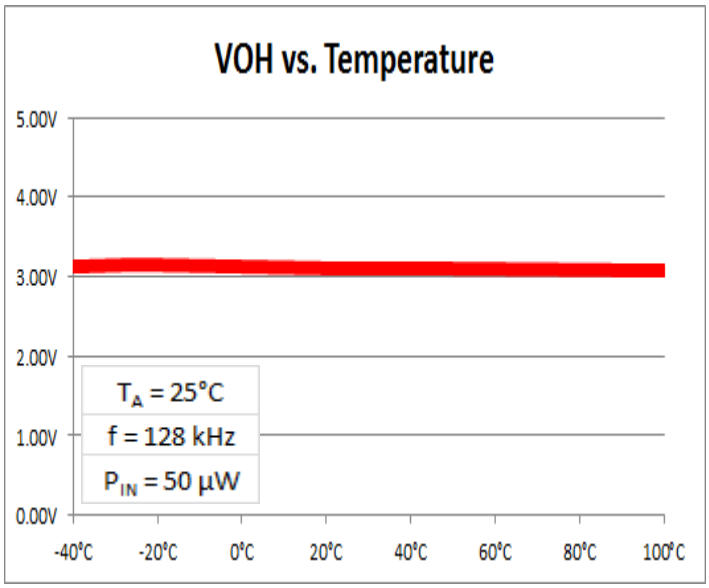


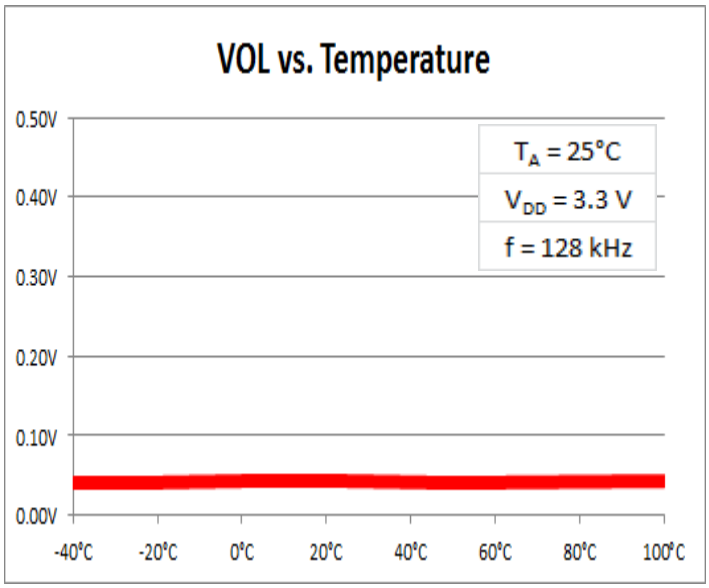




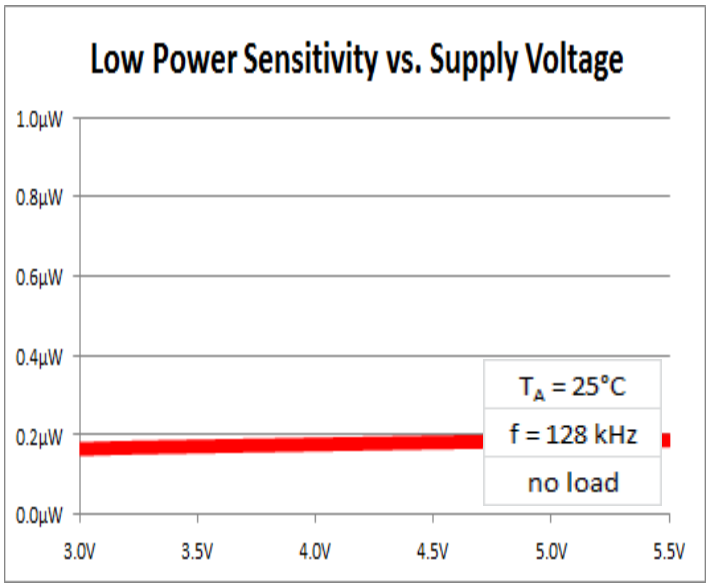


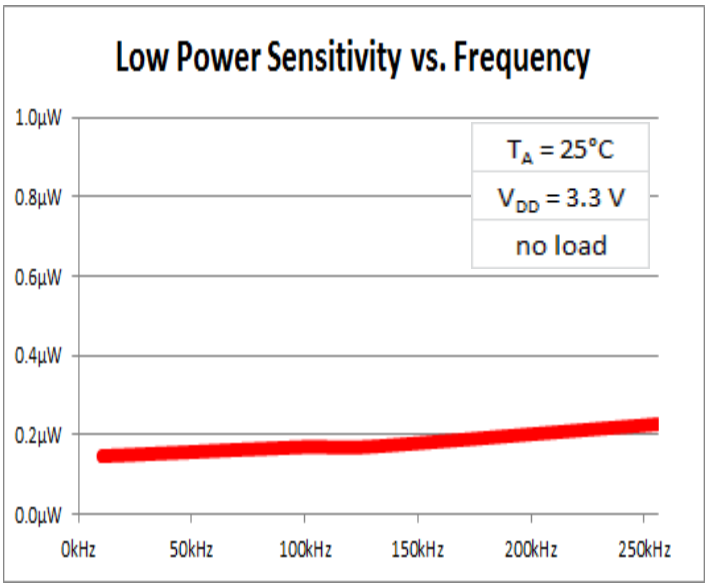
High and Low Level Output Voltage

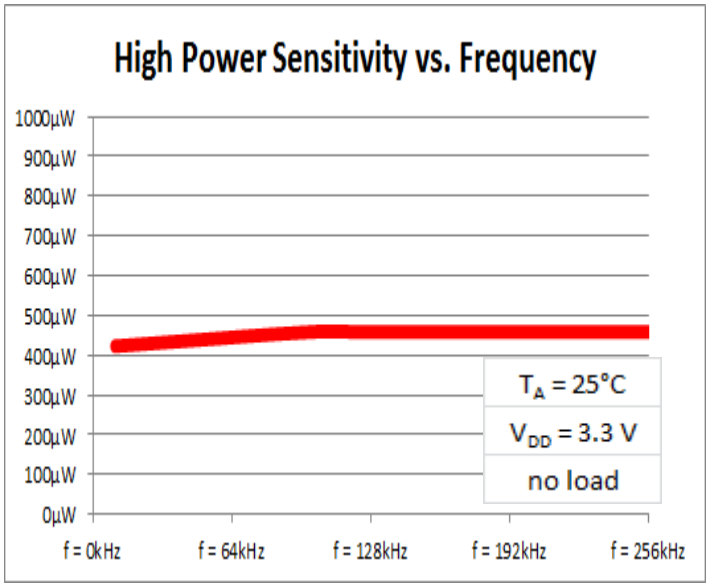


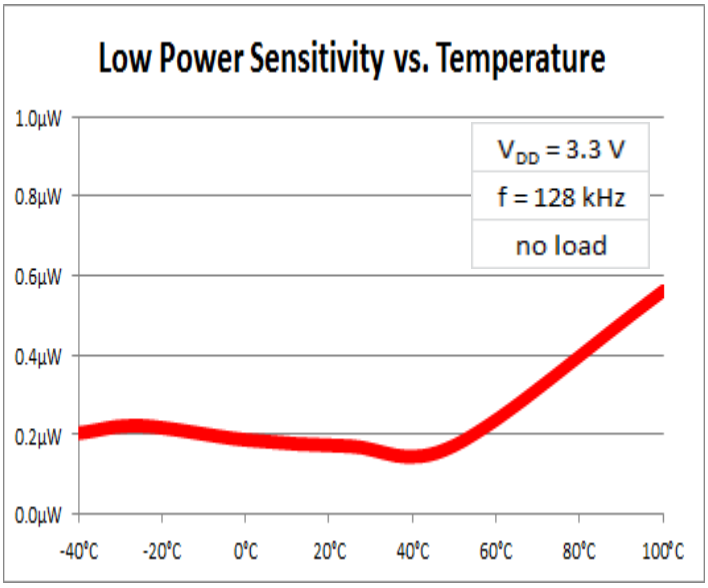


Sensitivity

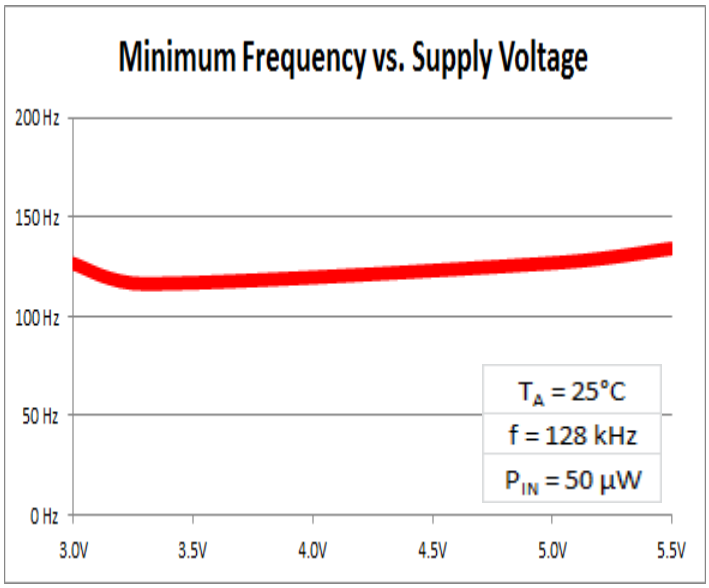


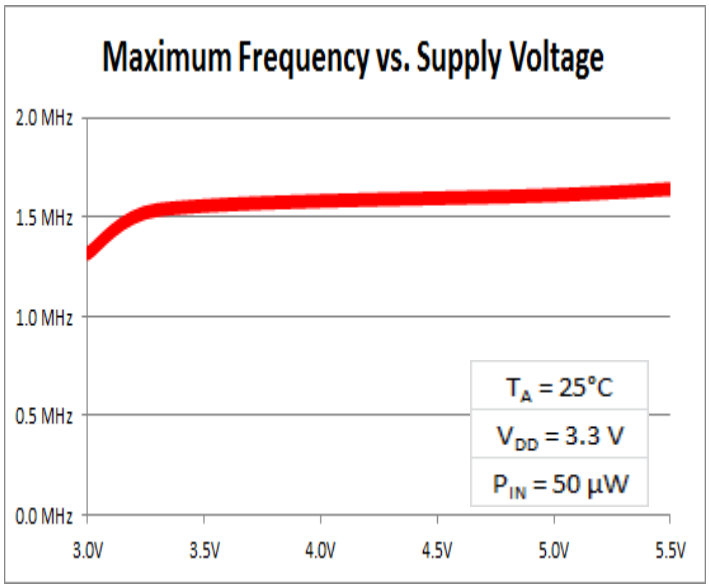


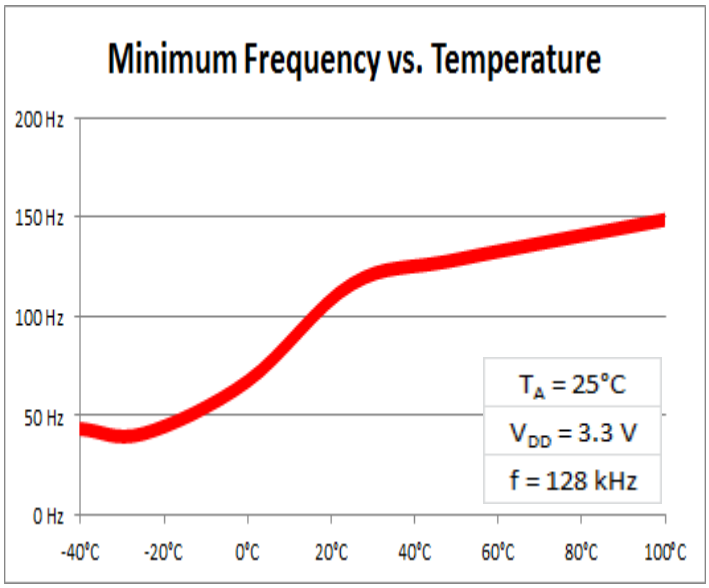


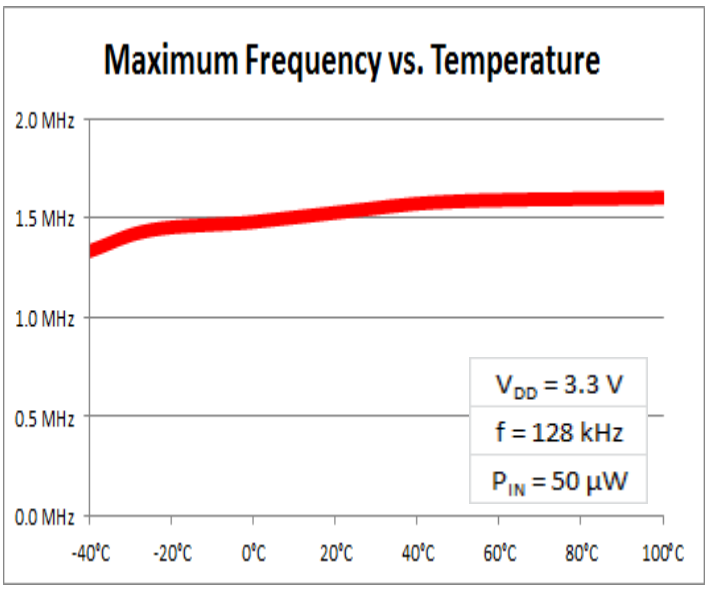


Frequency Response





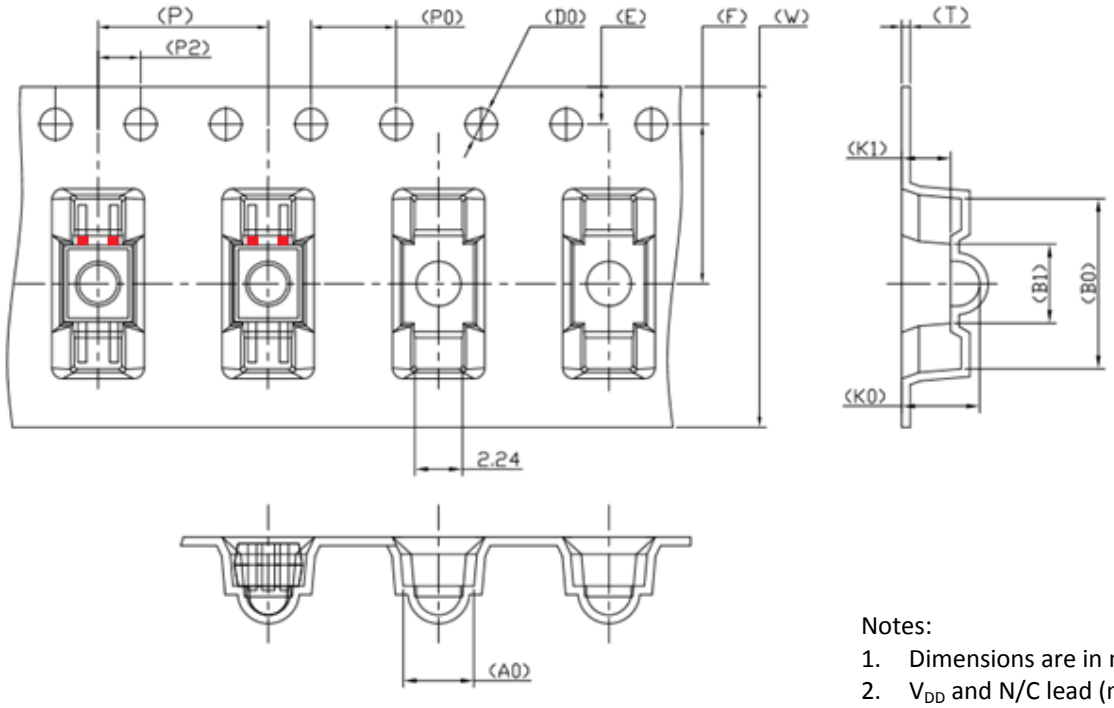




SMD Receiver Component

OPL6000

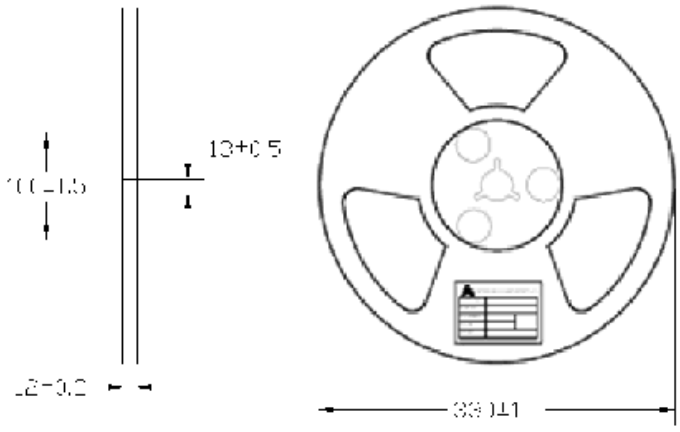
Packaging



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	ø1.50$^{+0.10}_{0.00}$				

Notes:

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



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