OptoSupply
Light It Up

4.6*2.6*4mm Rectangular Oximeter Receiver

OSPTYJ53X2T

■Features

- No external components, high-resolution conversion of light intensity to square wave frequency
- High sensitivity response/Low dark frequency at 50 degrees is less than 5HZ
- Single power supply range 2.5V to 5.5V/Interface directly connects to microcontroller
- Water Clear Type

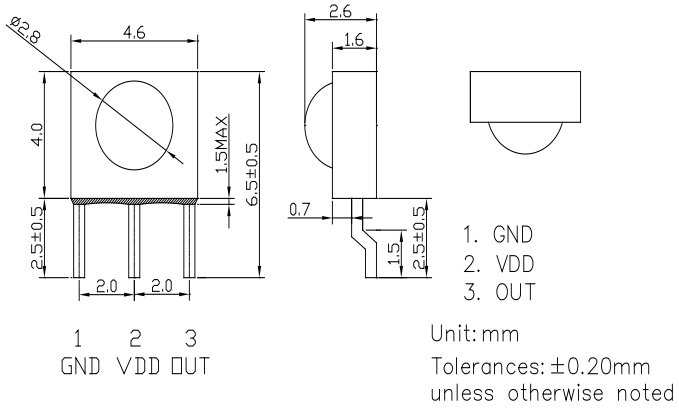
■Applications

- Oximeter receiver/Medical instrumentation/Radiometric instruments

■Description

The OSPTYJ53X2T light-to-frequency converter integrates a silicon photodiode and current-to-frequency converter on a single CMOS integrated circuit. The output (signal) is a square wave (50% duty cycle) whose frequency is proportional to the intensity (irradiance) of the photodiode. Digital outputs enable direct interface to microcontrollers or other logic circuits. The device responds in the light wavelength range of 320nm to 1050nm.

■Outline Dimension

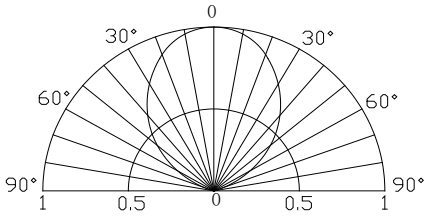


■Absolute Maximum Rating (Ta=27℃)

Parameter	Symbol	Value	Unit
Forward Voltage	V_F	6	V
Operating Temperature	Topr	-40~ +100	℃
Storage Temperature	Tstg	-40 ~ +125	℃
Lead Soldering Temperature	Tsol	260℃/5sec	-

*Absolute maximum ratings for operation over free-air temperature range (unless otherwise stated)

■Directivity



■Electrical -Optical Characteristics (Ta=27℃)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply Voltage	Vdd		2.5	-	5.5	V
Reception Distance	d		-	10	-	m
High Level Output Voltage	VOH	LOH=1mA	4.0	4.5	-	V
Low Level Output Voltage	VOL	LOH=1mA	-	0.25	0.4	V
Supply Current	LDD		-	1.6	2.5	mA
Full Scale Frequency*1			-	700	-	KHZ
Output Frequency Temperature Coefficient		Wavelength < 700nm, fo = 50 kHz	-	±300	-	ppm/℃
Supply Voltage Sensitivity	KSVS	3.3-5.0V	-	±0.65	-	%/v
Output Frequency	Fo	Ee=25uW/c ㎡	40	50	60	KHZ
Dark Frequency	Fd	Ee = 0uW/c ㎡	0	4	-	HZ
		Ee=0uW/c ㎡,TA=50℃	0	7	-	HZ
Irradiance Responsivity	Re		-	2	-	KHZ (UW/C ㎡)
Nonlinearity§*2		fo=0 KHZ to 10 KHZ	±1%			%f. s.
Ste response to full scale step input			2 Pulse of new freq			
Spectral Sensitivity	λ	Spectral Sensitivity	320	-	1050	nm
Half Angle	Δθ			90		deg

*1. Full-sale frequency is the maximum operating frequency of the device without saturation

*2. Nonlinearity is defined as the deviation of from a straight line between zero and full scale expressed as a percent of full scale.

LED & Application Technologies

ISO 9001: 2008

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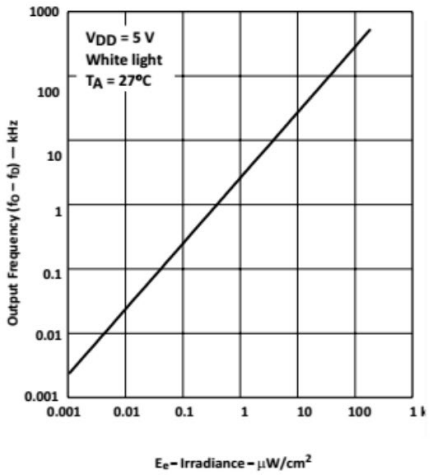
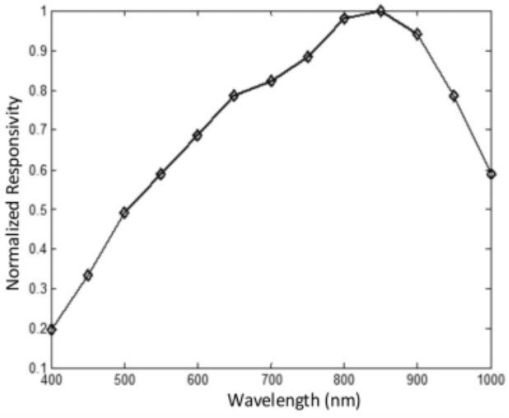
■ Typical Characteristics

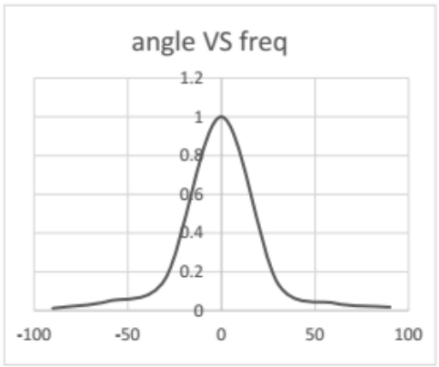
Output frequency and light intensity



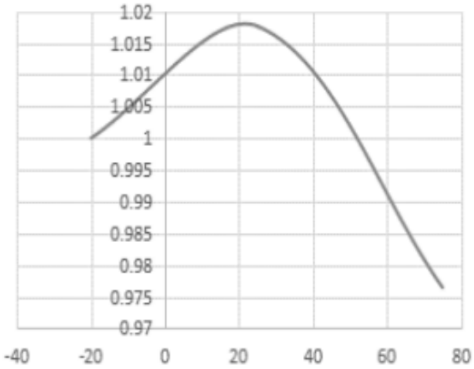
Normalized response rate versus wavelength



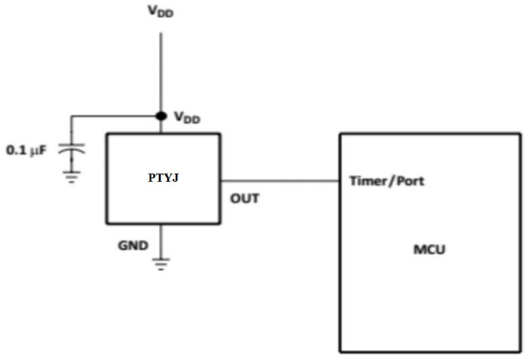
Normalized frequency and Angle of incidence



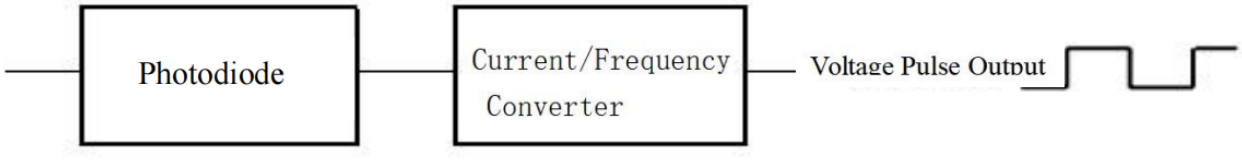
Normalized frequency versus temperature



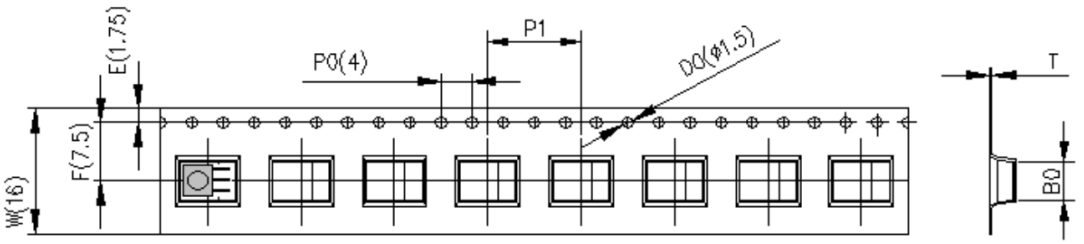
■ Application Circuit Diagram



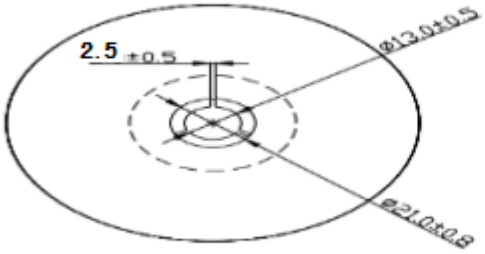
■ Functional Diagram

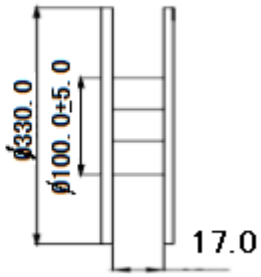


■Packaging Dimensions



Symbol	A0	B0	K0	P0	P1	P2
Dimension	7.20±0.1	5.00±0.1	3.10±0.1	4.0±0.1	12.0±0.1	2.0±0.1
Symbol	W	T	E	F	D0	D1
Dimension	24.0±0.3	0.40±0.05	1.75±0.1	11.50±0.1	$\phi 1.5^{+0.1}_{0}$	$\phi 2.0^{+0.1}_{0}$





Notes:

1. Unit: mm
2. 1500pcs/Reel