InGaAs PIN Photodiode

Model: OPR1000-IGA26-T2-O

Features

- 50% cut-off wavelength > 2.6um
- Enhance InGaAs PIN: 1000 to 2600nm
- TEC for temperature control
- Two stage TEC

Applications

- Spectrophotometer
- Diode laser monitoring
- Non-contact temperature measurement
- Gas analysis

Absolute Maximum Ratings (T_a=25℃)

Symbol	Characteristic	Min.	Typ.	Max.	Unit
D_{TMAX}	Maximum temperature difference at I=I_{MAX}			96	k
Q_{TMAX}	Maximum heat pumping capacity at I=I_{MAX}			1.3	W
I_{MAX}	Maximum current			1.2	A
U_{MAX}	Maximum voltage drop			3.7	V
V_R	Reverse voltage			1	V
I_R	Reverse current			1	mA
I_F	Forward current			10	mA
T_{OPR}	Operating temperature	-40		+100	℃
T_{STG}	Storage temperature	-55		+125	℃

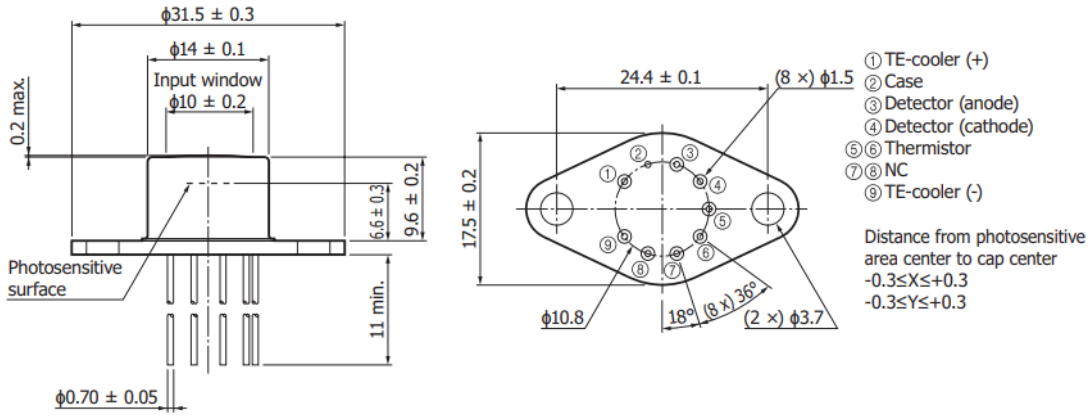
Electrical and optical characterisitics

Parameter	Symbol	Value			Unit	Test conditions
		Min.	Typ.	Max.		
Active area	Dia.		Φ950		μm	
Dark current	I_D		25	15	μA	V_R=0.5V
Shunt resistance	R_{SH}	2	10		kΩ	V_R=10mV

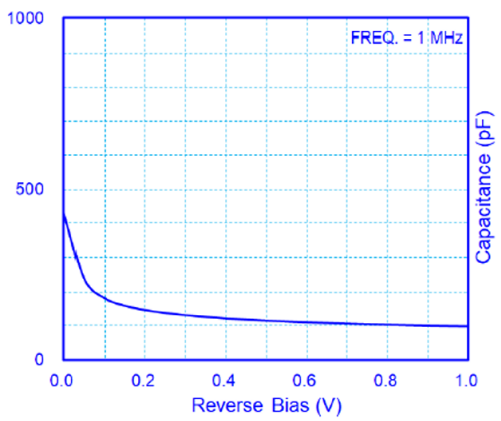
Junction Capacitance	C_J		450 150	750 250	pF	V_R=0V; f=1MHz V_R=0.5V; f=1MHz
Cut frequency		10	15		MHz	V_R=0.5V; R_L=50Ω
Detectivity	D*		6.7×10^{-11}		MHz	2.3μm, 0V
Noise Equivalent Power	NEP		1.5×10^{-12}		$W/Hz^{1/2}$	2.3μm, 0V
Photo sensitivity	S_R	1.1 1.2			A/W	1.9μm, 0V 2.3μm, 0V
Spectral Application Range	λ_{range}	900		2600	nm	
Spectral Response-Peak	λ_P		2550		nm	
Temp. sensor resistance		9900	10000	10100	Ω	NTC, Beta (25/50)=3930K
Heat transported by TEC				4.6	W	Performance under standard conditions
Angular Resp 50% resp pt	$\theta_{1/2}$		±70		Degrees	

Block Diagram and Pin description

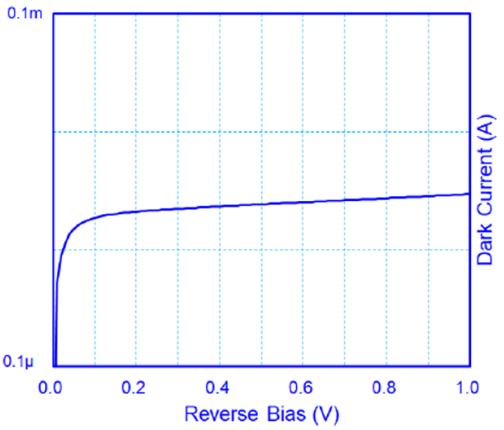
Note: All dimension are in millimeters.



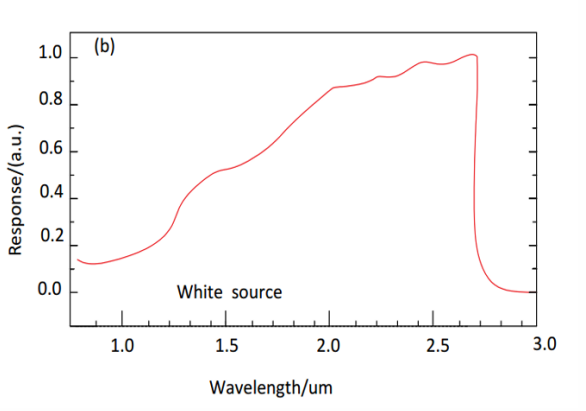
Capacitance vs. UR(per segment)



Dark current vs. UR (per segment)



Spectral response (M=100, Ta=25℃)



Temperature Sensor (NTC)

Temp		Resistance(kΩ)		
K	℃	Min.	Typ.	Max.
233.15	-40		20.52	
238.15	-35		15.48	
243.15	-30		11.79	
248.15	-25		9.069	
253.15	-20		7.037	
258.15	-15		5.507	
263.15	-10		4.344	
268.15	-5		3.453	
273.15	0		2.764	
278.15	5		2.227	
283.15	10		1.806	
288.15	15		1.474	
293.15	20		1.211	
298.15	25		1	
303.15	30		0.8309	
308.15	35		0.6941	
313.15	40		0.5828	
318.15	45		0.4916	
323.15	50		0.4165	
328.15	55		0.3543	
333.15	60		0.3027	
338.15	65		0.2595	
343.15	70		0.2233	
348.15	75		0.1929	
353.15	80		0.1672	
358.15	85		0.1451	
363.15	90		0.1261	
368.15	95		0.1097	
373.15	100		0.09563	
378.15	105		0.08357	
383.15	110		0.07317	
388.15	115		0.06421	
393.15	120		0.0565	
398.15	125		0.04986	

B(25/50)		3375	
B(25/85)	3435		

$$T=\frac{B\times T_n}{B+\ln(\frac{R_T}{R_N})\times T_N}$$