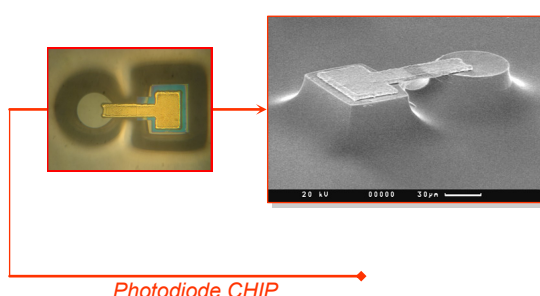


Features

- High speed
 $t_{\text{rise}} = 50 \text{ ps}$; $t_{\text{fall}} = 100 \text{ ps (typ.)}$
- High sensitivity
- Superior linearity



Applications

- Optical fiber communications
- Optical high-speed waveform measurements
- High-speed data links
- Free-space optical links

Description

IBSG has developed high speed (HS) photodiode **PD24-005-HS** with fast response times. This model can be applied to optical high-speed waveform measurements as well as for optical communications.

PD24-005-HS photodiode is designed for detection of radiation in the Middle Infrared (mid-IR) spectral range from 0.9 to 2.4 μm . High speed of response makes it possible to detect modulated radiation of IR lasers and light-emitting diodes (LEDs).

Photodiode chip is mounted in SMA bulkhead jack.

The 50 μm diameter of sensitive area provides low PD capacitance and high speed of response.

Related products: **PD24-005-HS** can be used in optical pair with our **LED18-LED23**.

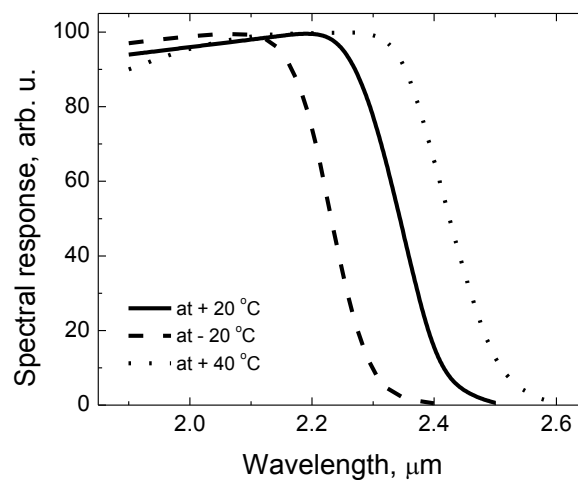
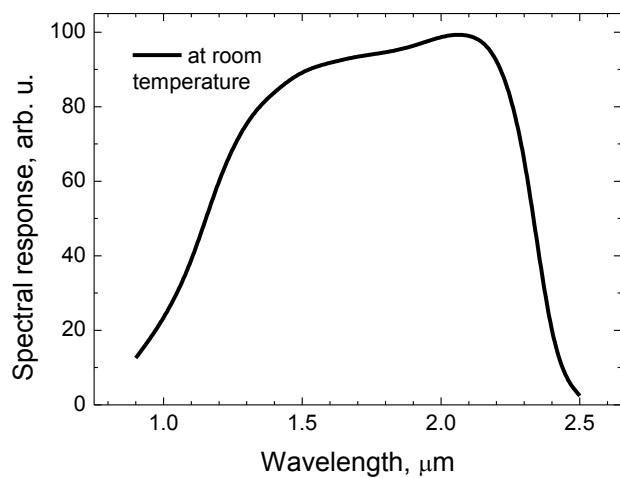
General characteristics

Package	Parameter	Symbol	Value	Unit
SMA	Sensitive area diameter	d	0.05	mm
	Weight	m	8.2	g
	Window material		no or glass	
	Operating temperature	T_{opr}	- 200...+ 60	$^{\circ}\text{C}$
	Storage temperature	T_{stg}	- 55...+ 70	$^{\circ}\text{C}$
	Maximum reverse bias voltage	V	2.0	V
	Size	D	10.20	mm
		H	22.10	

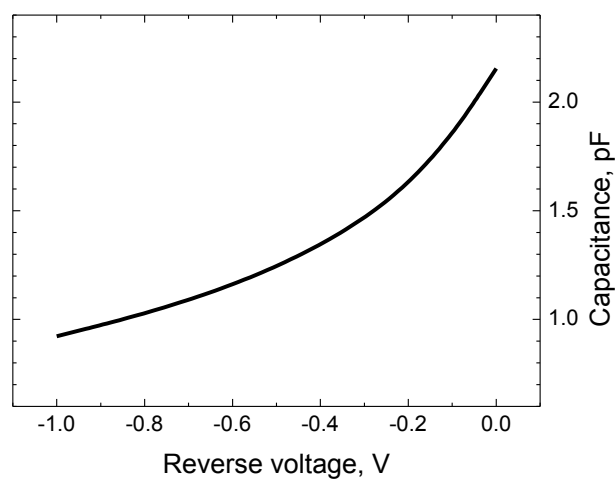
Electrical and optical characteristics

Parameter	Symbol	Condition $T \approx + 20\text{ }^{\circ}\text{C}$	Min.	Typ.	Max.	Unit
Cut-off wavelength	λ	at level 10%	2.37	2.40	2.42	μm
Peak sensitivity wavelength	λ_p	at level 90%	1.3 - 2.2			μm
Sensitivity	S	at λ_p	0.9	1.0	1.1	A/W
Detectivity	D^*	at λ_p	$0.5 \cdot 10^{11}$	$0.9 \cdot 10^{11}$	10^{11}	$\text{cm} \cdot \text{Hz}^{1/2} \cdot \text{W}^{-1}$
Dark current	I_d	$V = - 0.2\text{ V}$	0.1	0.1	1.3	μA
		$V = - 0.5\text{ V}$	0.1	0.2	0.4	
		$V = - 1.0\text{ V}$	0.7	1.5	4.0	
Terminal capacitance	C	$V = 0\text{ V}$, $f = 1\text{ MHz}$	1.2	1.2	2.5	pF
		$V = - 3\text{ V}$, $f = 1\text{ MHz}$	0.5	0.5	0.9	
Cut-off frequency	f_c	$V = 0\text{ V}$, $R_L = 50\text{ }\Omega$	4.5	5.0	5.5	GHz
Rise time	t_r		50	100	150	ps
Fall time	t_f					
Shunt resistance	R_0	$V \approx - 10\text{ mV}$	20	70	120	k Ω
Noise equivalent power	NEP	at D^*	$1.8 \cdot 10^{-13}$	$9.9 \cdot 10^{-14}$	$8.9 \cdot 10^{-14}$	$\text{W} \cdot \text{Hz}^{-1/2}$

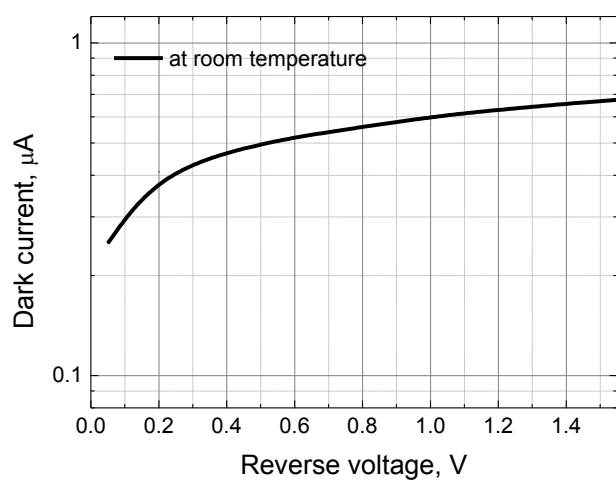
▼ Spectral response



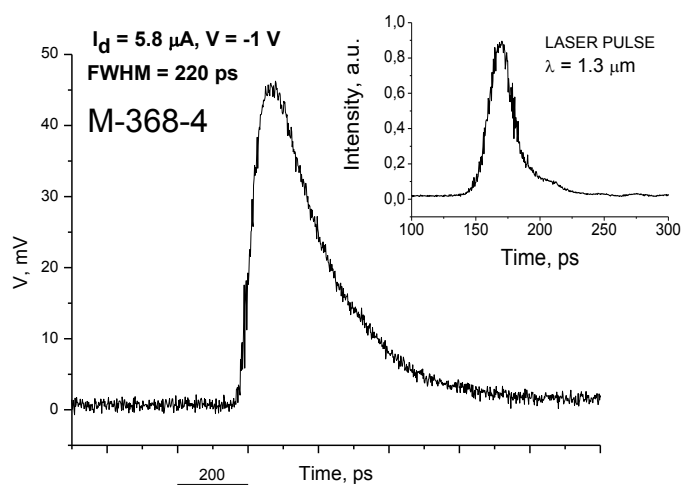
▼ Shunt resistance vs. element temperature ▼ Capacitance vs. reverse voltage



Dark current vs. reverse voltage



Optical pulse response



▼ SMA package dimensions (unit: mm [inches])

