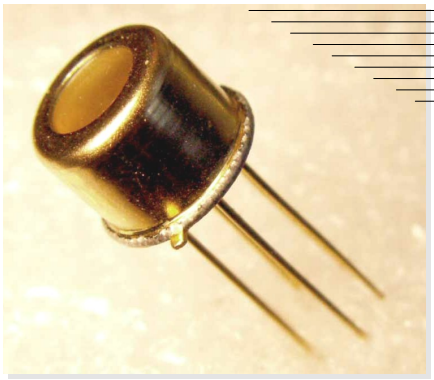
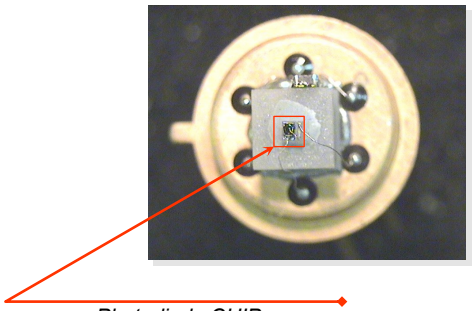
Mid infrared IBSG Optoelectronics



Features

- **High reliability**
- **Superior linearity**
- **Thermo stability**
- **Easy-to-use detector/amplifier modules are also available**



Photodiode CHIP

Applications

- **Invironment measurements**
- **Infared spectrophotometry**
- **Laser detection**
- **Analytical instruments**

Accessories (optional)

- **Amplifier with temperature controller AMT-07M**

Description

Photodiode **PD36-03-TEC** is a model of photodetector for detection of radiation at room temperature in the Middle Infrared (Mid-IR) spectral range from 1500 to 3800 nm.

Photodiode **PD36-03-TEC** has thermo electric cooler (**TEC**) and termistor for a control of temperature. Components are integrated inside the standard 9.2 mm TO-5 package with **TEC**.

Diameter of the photosensitive area of **PD36-03-TEC** is 300 μm. High speed of response makes it possible for detection of modulated radiation of laser diodes (LDs) and light-emitting diodes (LEDs).

Related products: **PD36-03-TEC** can be used in optical pair with our **LED185**...**LED36**.

General characteristics

Package	Parameter	Symbol	Value	Unit
TO-5 with **TEC**	Sensitive area diameter	d	0.3	mm
	Weight	m	1.15	g
	Operating temperature	T_{opr}	− 20…+ 40	℃
	Window material	sapphire glass		
	Cooling	one-stage TE-cooled		
	Soldering temperature	T_s	+ 230	℃
	Storage temperature	T_{stg}	− 20…+ 50	℃
	Maximum reverse bias voltage	V_b	− 1.0	V
	Size	D	9.2	mm
		H	20.2	

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Electrical and optical characteristics

Parameter	Symbol	Condition	Element temperature			Unit
			− 20 °C	0 °C	+ 20 °C	
Spectral sensitivity range	λ	at level 10%	1.5* - 3.6	-	1.5* - 3.8	μm
Peak sensitivity wavelength	λ_p	at level 90%	2.5 - 3.3	-	2.6 - 3.4	μm
Photo sensitivity	S	at λ_P	1.0 - 1.2			A/W
Detectivity	D*	at λ_P	$[0.6 - 1.0]\cdot10^{10}$	-	$[3 - 6]\cdot10^{9}$	$cm\cdot Hz^{½}\cdot W^{-1}$
Dark current	I_d	V_b = − 0.2 V	40 - 90	-	150 - 350	μA
		V_b = − 0.4 V	90 - 150	-	200 - 500	
Capacitance	C	V_b = 0 V, f = 1 MHz	70 - 1000			pF
Rise time	t_r	V_b = 0 V, R_L = 50 Ω	20 - 120			ns
Fall time	t_f					
Shunt resistance	R_0	$V_b \approx \pm$ [5 - 10] mV	900 - 6700	-	100 - 1200	Ω
Noise equivalent power	NEP	at λ_P	-	-	-	$W\cdot Hz^{-½}$

TEC *TO506.1MC0400710.TB103* parameters (without load)

Parameter	Symbol	Condition	Value	Unit
Current power	I_{max}	ΔT_{max}	1.50	A
Voltage	U_{max}	ΔT_{max}	0.80	V
Cooling energy	Q_{max}	-	1.30	W
Temperature range	ΔT_{max}	vacuum	70	K
Termistor resistance	R_t	at + 20 °C	10.00	kΩ

* Not at level 10%

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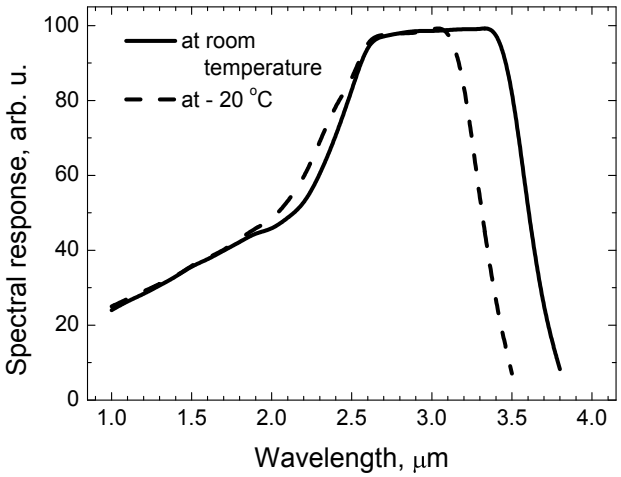
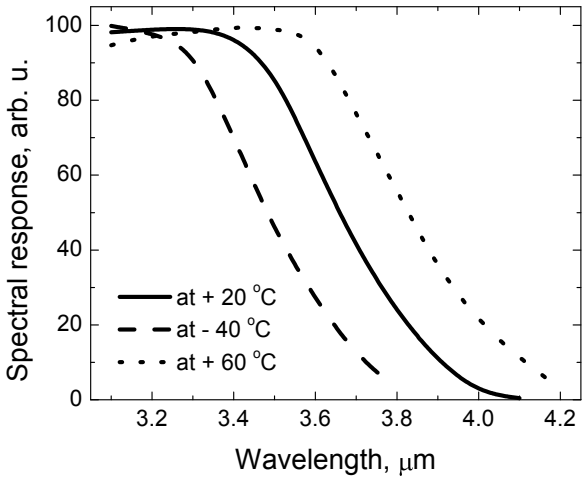
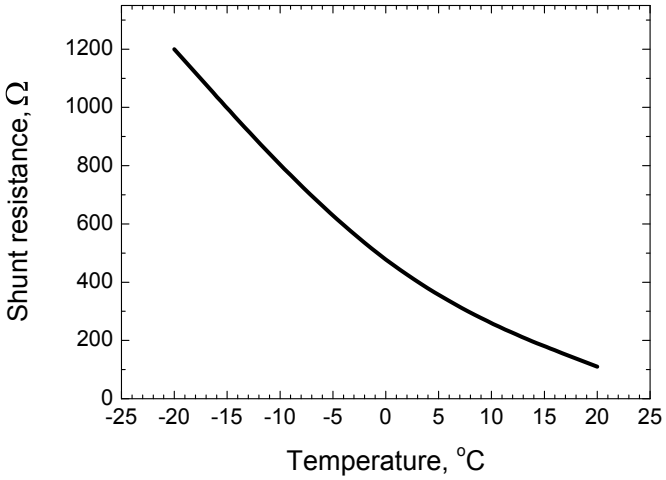
Spectral response





Shunt resistance vs. element temperature



Capacitance vs. reverse voltage

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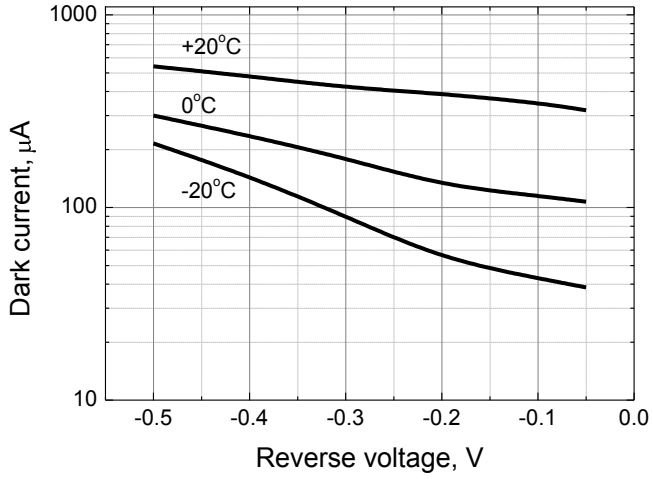
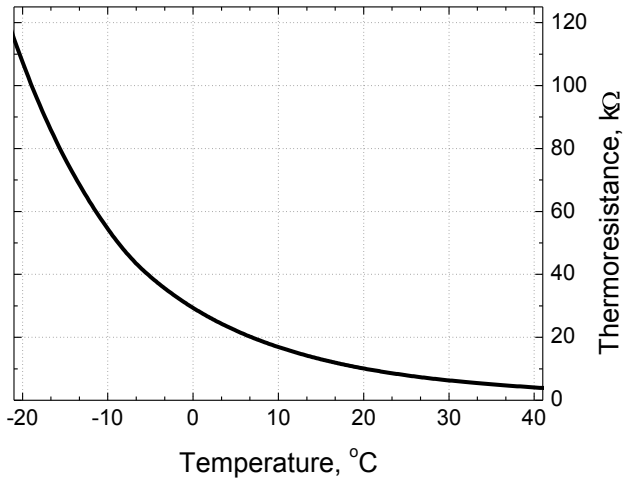
Dark current vs. reverse voltage



Thermoresistance vs. temperature



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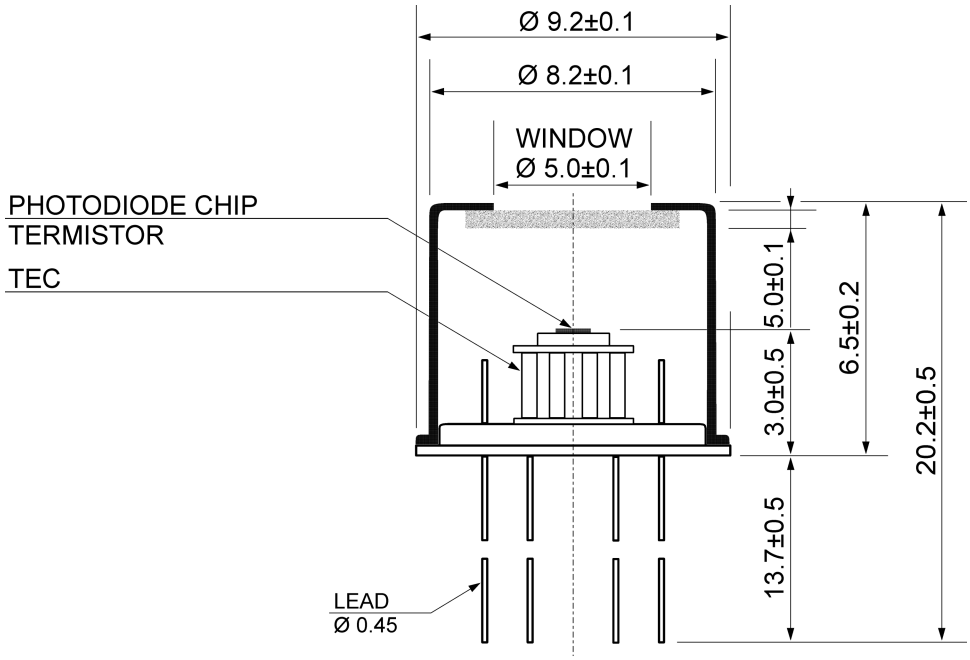
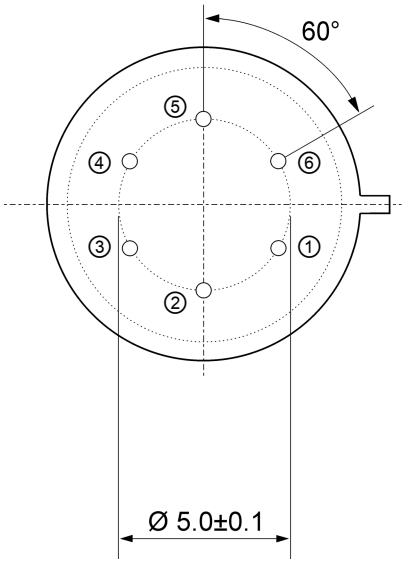
TO-5 package with TEC dimensions (unit: mm)





Pin	Description
①	TEC (anode)
②	Detector (anode)*
③	Detector (cathode)*
④	Termistor TC103
⑤	
⑥	TEC (catnode)

*Special order: the pin polarity can be changed.

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