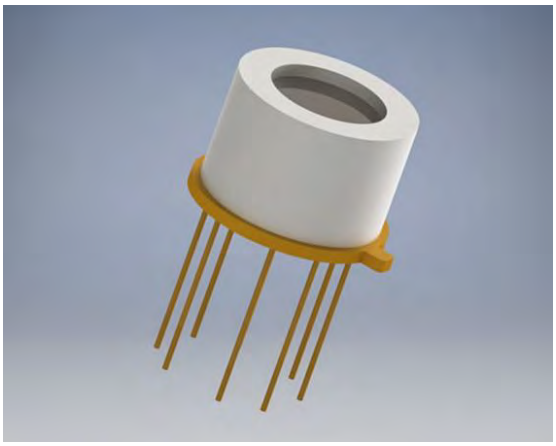
900-1700nm two Stage TEC, TO 8 package InGaAs Photodiode



Description

SIN-2TE-TO8 series unit InGaAs detector is mainly composed of P-I-N structure InGaAs photosensitive chip, transition electrode plate, temperature sensor and Two Stage thermoelectric cooler (2TE), in the form of TO package. This user manual only describes the product series.

Features

- Chip active diameters from 300μm to 3000 μm
- Spectral response from 850 nm to 1700 nm
- High shunt resistance for high sensitivity
- TEC Built Inside

Application

- NIR sensing/radiometry
- LED/LD characterization
- Spectroscopy
- Medical diagnostics

E/O Characteristics

Structure Parameters

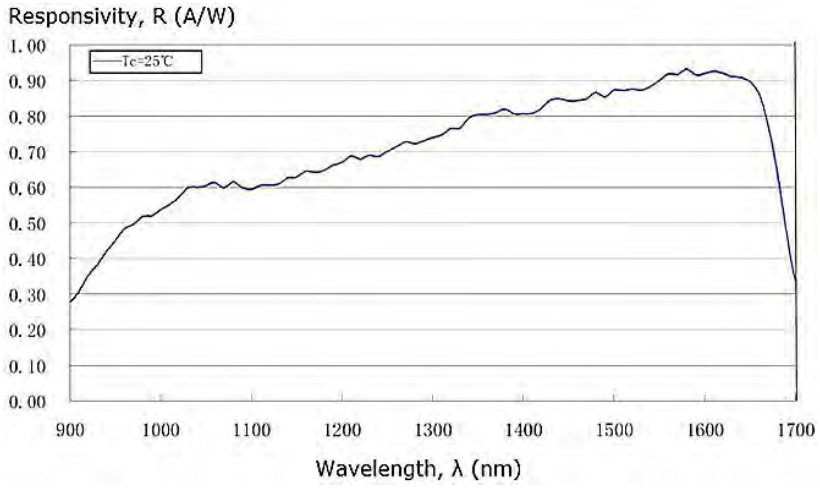
Part Number	Package	Cooling	Active Area	Chip size	Electrode Size
SIN-2TE-TO8-0300	TO-8	2TE	Φ300μm	850×850um	140×180um
SIN-2TE-TO8-0500			Φ500μm	1000×1000um	140×180um
SIN-2TE-TO8-1000			Φ1000μm	1410×1410um	140×180um
SIN-2TE-TO8-2000			Φ2000μm	2560×2560um	280×360um
SIN-2TE-TO8-3000			Φ3000μm	3560×3560um	320×480um

EO Parameters

Part Number	Test Temp Tch(℃)	Spectral λ (nm)	Dark Current ID(μA)		Junction Capacity C(f=1MHz，VR=0V) (pF)
			VR=0.01V	VR=0.5V	
SIN-2TE-TO8-0300	25	900-1700	0.1	0.5	50
SIN-2TE-TO8-0500			0.2	1	100
SIN-2TE-TO8-1000			1	4	300
SIN-2TE-TO8-2000			4	10	800
SIN-2TE-TO8-3000			10	40	2000

Part Number	Peak Response(A/W)	Junction Impedance Rsh(VR=10mV) MΩ	Peak Detection Rate D*(cm·Hz1/2/W)	Noise Equivalent Power NEP (W/Hz1/2)
SIN-2TE-TO8-0300	1.0	3500	3×1012	8.9×10-15
SIN-2TE-TO8-0500		1000		1.5×10-14
SIN-2TE-TO8-1000		300		3.0×10-14
SIN-2TE-TO8-2000		80		5.9×10-14
SIN-2TE-TO8-3000		40		8.9×10-14

Response Cure



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TEC Parameters

Operating Environment

Parameter	Typ
Operating temperature(℃)	-45~+55
Storage temperature(℃)	-50~+60

Characteristics of thermoelectric coolers

The detector integrates a two-stage thermoelectric cooler (TEC), and the center of the cooling surface is the center of the lower surface of the detector, and the cooling area should be ≥6mm×6mm, and its performance parameters are shown in the following table:

Performance index	Value
Maximum thermal load power（Qmax/W）	0.93W
Maximum load current allowed（ITEC-max/A）	1A
The maximum load voltage allowed（VTEC-max/V）	2V

Temperature monitoring module characteristics

This detector uses the thermistor as the temperature monitoring module. The mapping between the resistance value and the temperature in the working temperature is shown in the following table:

Temperature(℃)	Resistance（kΩ)	Temperature(℃)	Resistance（kΩ)
-65	94.270	-15	6.909
-60	69.290	-10	5.587
-55	51.500	-5	4.549
-50	38.700	0	3.729
-45	29.400	5	3.075
-40	22.560	10	2.55
-35	17.490	15	2.126
-30	13.690	20	1.782
-25	10.810	25	1.5
-20	8.608	30	1.268

The corresponding relationship between thermistor value and temperature is as follows:

$$\frac{1}{(T1+273.15)}=\frac{\ln\left(\frac{R1}{R2}\right)}{B}+\frac{1}{(T2+273.15)}$$

T1：Test target temperature, unit: ℃;

T2：Reference point temperature, unit: ℃, The typical value of the reference temperature within -20~70℃ is 10 or 40℃, and the reference temperature close to the target temperature should be selected.

R1：T1 corresponding thermistor resistance value, unit: kΩ;

R2：T2 corresponding thermistor resistance value, unit: kΩ;

B：T2 corresponding thermistor resistance value, unit: kΩ;

B：Between-20~70deg,the typical B value is 3019.6±60.

Notice:

a) During TEC installation, pay attention to the new resistance introduced by the external electrical structure. If the new resistance exceeds

When TEC resistance is 10%, the I-V curve needs to be recalibrated.

b) It is recommended to switch on TEC in a way with small connection resistance. If welding is required, short circuit is required Grounding protection, welding temperature ≤250℃, welding duration < 10s;

Dimensions and Fiber definitions

